PB83-261719

Irrigation Return Flow Water Quality Monitoring, Modeling and Variability in the Middle Rio Grande Valley, New Mexico

New Mexico Inst. of Mining and Technology
Socoro

Prepared for

Robert S. Kerr Environmental Research Lab.
Ada, OK

Sep 83

U.S. Department of Commerce
National Technical Information Service
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1. REPORT NO.	2.	3. RECIPIENT'S ACCESSION NO.
EPA-600/2-83-072		PB83-261719

4. TITLE AND SUBTITLE	5. REPORT DATE
IRRIGATION RETURN FLOW WATER QUALITY MONITORING, MODELING AND VARIABILITY IN THE MIDDLE RIO GRANDE VALLEY, NEW MEXICO	September 1983
	6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) L.W. Gelhar, P.J. Wierenga, K.R. Rehfeldt, C.D. Duffy, M.S. Simonett, T.-C. Yeh, W.R. Strong	8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS Department of Geoscience, New Mexico Institute of Mining and Technology, Socorro, New Mexico 87801 Department of Agronomy, New Mexico State University, Las Cruces, New Mexico 88003	10. PROGRAM ELEMENT NO. C34B1B
	11. CONTRACT/GRANT NO. R-806092
12. SPONSORING AGENCY NAME AND ADDRESS Robert S. Kerr Environmental Research Laboratory Office of Research and Development U.S. Environmental Protection Agency Ada, OK 74820	13. TYPE OF REPORT AND PERIOD COVERED Final
	14. SPONSORING AGENCY CODE EPA/600/15

15. SUPPLEMENTARY NOTES

16. ABSTRACT A 250-acre (100 hectare) irrigated farm in the middle Rio Grande valley at San Acacia, New Mexico, was intensively monitored for the five year period from 1977 through 1981. During that time there was no statistically significant change in the total dissolved solids concentration in the shallow groundwater underlying the site. Upwelling of water from a deep, high-salinity regional aquifer is the probable source of a majority of the salinity observed in the drains. A significant increase in nitrate concentration in the drains and shallow groundwater was observed as portions of the farm were converted from alfalfa to corn. Analyses of extensive, systematic measurements of the spatial variability of chemical and physical parameters gave spatial correlation scales on the order of 10 meters in the horizontal direction and less than 1 meter in the vertical. Major weekly chemical variations were observed in the irrigation water, groundwater, and drains. Two computer-based models were used to simulate the flow and water quality behavior. A two-cell lumped parameter model adequately simulated the average monthly drain water chloride concentration. Results from a modified version of the U.S. Bureau of Reclamation hydrosalinity model were in reasonable agreement with the monitored drain water quality at the end of a 30 year steady state simulation. However, the modified model was unable to simulate the observed transient, seasonal variation of drain salinity during the 5 year monitoring period. The chemical reactions included in the modified model did not have a significant effect on the model predictions for the San Acacia site.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Irrigation, Salinity, Water Quality, Ground Water, Irrigation Efficiency, Subsurface Flow	Irrigation return flows, Nonpoint sources, Rio Grande River Basin, New Mexico, Salinity sources	43F 48B 48F 68D

18. DISTRIBUTION STATEMENT	19. SECURITY CLASS (This Report)	21. NO. OF PAGES
Release to Public	Unclassified	515
	20. SECURITY CLASS (This page)	22. PRICE
	Unclassified	

EPA Form 2220-1 (9-73)

PB83-261719

EPA-600/2-83-072
September 1983

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Although the research described in this report has been funded wholly or in part by the United States Environmental Protection Agency through Grant no. R-806092 to the New Mexico Institute of Mining and Technology, Socorro, it has not been subjected to the Agency's required peer and policy review and therefore does not necessarily reflect the views of the Agency, and no official endorsement should be inferred. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

FOREWORD

EPA is charged by Congress to protect the Nation's land, air and water systems. Under a mandate of national environmental laws focused on air and water quality, solid waste management and the control of toxic substances, pesticides, noise, and radiation, the Agency strives to formulate and implement actions which lead to a compatible balance between human activities and the ability of natural systems to support and nurture life. In partial response to these mandates, the Robert S. Kerr Environmental Research Laboratory, Ada, Oklahoma, is charged with the mission to manage research programs to investigate the nature, transport, fate, and management of pollutants in ground water and to develop and demonstrate technologies for treating wastewaters with soils and other natural systems; for controlling pollution from irrigated crop and animal production agricultural activities; for developing and demonstrating cost-effective land treatment systems for the environmentally safe disposal of solid and hazardous wastes.

This report contains the major findings of an extensive study of ground-water flow and salinity sources in the Middle Rio Grande Valley of New Mexico. A modified version of the USBR hydrosalinity model was used to simulate long-term steady state average flow conditions, and the four year monitoring period under transient flow conditions. The study demonstrated the utility of the model in assessing subsurface salinity sources, which should benefit environmental managers as they identify and implement pollution control strategies relevant to western irrigated agriculture.

Clinton W. Hall

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ABSTRACT

A 250-acre (100 hectare) irrigated farm in the middle Rio Grande valley at San Acacia, New Mexico was intensively monitored for the five year period from 1977 through 1981. The quantity and quality of the applied irrigation water and the drain flow leaving the farm were observed, and 39 observation wells were installed to monitor groundwater levels and quality. The data indicate that there has not been a statistically significant change in the total dissolved solids concentration in the shallow groundwater underlying the site during the monitoring period. A significant increase in nitrate concentration in the shallow groundwater and the drains was observed as portions of the farm were converted from alfalfa to corn.

The observations also included extensive systematic measurements of the temporal and spatial variability of chemical and physical parameters at the site. The spatial observations, which included measurements of infiltration rate, grain size distribution, electrical conductivity and chloride concentration, showed substantial variability, with correlation scales on the order of 10m in the horizontal direction and less than 1m in the vertical. The temporal data show major weekly variations in composition of the irrigation water, groundwater and drainflow.

The data from deep wells demonstrated the layered structure of the aquifer underlying the site and pointed to the possibility that upwelling regional groundwater discharge was producing a major influx of relatively high salinity water beneath the site.

The data collected at the San Acacia site were used to test two computer-based models which simulate the flow and water quality behavior. A two-cell lumped parameter model, which emphasizes the dynamic nature of the water and mass balances, adequately simulated the average monthly chloride concentration of the drain water.

A modified version of the U.S. Bureau of Reclamation (USBR) hydrosalinity model, which incorporates the layered structure of the aquifer and the contribution from high salinity regional inflow, was used to simulate a 30 year period under steady state average flow conditions, and the four year monitoring period under transient flow conditions. The results of the 30 year simulation are in reasonable agreement with the monitored water quality of the drain flow at the end of the period. However, the modified model was not able to simulate the observed seasonal variation of salinity emissions from the site during the monitoring period. The chemical reactions included in the USBR model did not have a significant effect on the model predictions for the San Acacia site.

This report was submitted in fulfillment of Grant No. R-806092 by the New Mexico Institute of Mining and Technology under partial sponsorship of the U.S. Environmental Protection Agency. This report covers the period October 1, 1978 through June 30, 1982. The work was completed as of July 1, 1982.

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ACKNOWLEDGMENTS

This report summarizes the project "Irrigation Return Flow Salinity Control in the Middle Rio Grande of New Mexico: Monitoring, Modeling and Variability" sponsored by the U. S. Environmental Protection Agency under Grant No. R-806092. Dr. Arthur G. Hornsby of the Robert S. Kerr Environmental Research Laboratory at Ada, Oklahoma served as project officer during the first two years of the work; Dr. James P. Law, Jr. was project officer for the remainder of the project.

This project is a joint effort of the Hydrology Program at New Mexico Institute of Mining and Technology (NMIMT) and the Department of Agronomy at New Mexico State University (NMSU). The following individuals have contributed to various aspects of the work reported here:

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This field study is being done on the farm of Gordon Herkenhoff, Jr.; his cooperation is very much appreciated. Initial monitoring work at this site was supported through a grant from the New Mexico Environmental Improvement Division as part of the planning process of Section 208 of Public Law 95-217. The U. S. Bureau of Reclamation provided support for the final year of the study through an interagency agreement with EPA; Dr. Jim Thomas was responsible for the agreement.

Marvin J. Shaffer, formerly with the U. S. Bureau of Reclamation in Denver, served as a consultant on the modeling aspects of the project. His suggestion regarding implementation of the USBR-EPA model have been very helpful. The U. S. Bureau of Reclamation also constructed two Parshall flumes at the site; the assistance of D. L. Winsett of the Denver office, and Antonio Mirabal and other personnel of the Channelization Field Division in Socorro is acknowledged. The staff of the Middle Rio Grande Conservancy District, in particular Frank Gonzales, deserve special credit for their cooperation and assistance.

John W. Hawley with the New Mexico Bureau of Mines and Mineral Resources prepared logs of several drill holes at the site. The Bureau of Mines also drilled some of the deep observation wells at the site.

SECTION 1

INTRODUCTION

Pollution from irrigated agriculture has presented a difficult problem in the national water quality strategy. Irrigated agriculture occupies large land areas, and as a result its impact on water quality is extensive, but at the same time rather diffuse. Furthermore, control of pollution from irrigated agriculture requires the simultaneous cooperation of many different land users, irrigation districts and state and federal institutions. Such a process necessitates careful planning and organization. Although it is generally recognized that irrigated agriculture contributes to degradation of water quality, the extent of such pollution varies from location to location and is frequently ill-defined. For example, in some western states suspended and settleable solids are the major causes for degradation of water quality, while in the arid southwest increases in the salinity of streams by salt-loading and salt concentrating mechanisms are the main reasons for water quality degradation. In some areas water quality is degraded by nutrients from fertilizer discharged in soil water, and in other areas irrigation return flow has increased levels of phosphates or nitrates originating from natural deposits. Thus in order to define the impacts of irrigated agriculture on water quality it appears necessary to perform field monitoring studies under various environmental conditions and at various locations.

The general objectives of this project are: (1) to monitor irrigation return flow quality on a 250 acre (100 hectare) test site in the Middle Rio Grande Valley at San Acacia, New Mexico, (2) to use data obtained at this site to test the Bureau of Reclamation-EPA irrigation return flow model, and (3) to evaluate the effects of spatial and temporal variability of flow and water quality. The following detailed subobjectives will be required:

1. To evaluate the effects of irrigation on water quality in the Middle Rio Grande Valley of New Mexico through intensive monitoring of a farm operation at San Acacia, New Mexico.

2. To evaluate the predictive capabilities of the Bureau of Reclamation hydrosalinity model applied to the San Acacia site, and to consider modifications necessary to improve this model.

3. To evaluate the spatial and temporal variability of flow and water quality inputs and parameters at the San Acacia site and apply stochastic analyses which incorporate data on the variability of chemical and flow parameters at the San Acacia site.

The Monitoring and Variability sections are interrelated. The extensive data base presented in the Monitoring section provides an appreciation of the complexity and variability of the water and chemical system of the site. The natural variability is then quantified, both spacially and temporally in the Variability section. These data are provided largely as a reference for future comparison of parameter variation, but do provide some suggestions for future sampling surveys.

The effect of the surrounding groundwater system is examined in the Groundwater Flow System section. Again this is related to monitoring in that even detailed examination of a small site may not lead to a complete understanding of the system.

The monitored data, the variability, and the regional groundwater system are all then incorporated into two types of models to simulate the water quality behavior of the San Acacia site.

SECTION 2

CONCLUSIONS

Intensive monitoring of the irrigation system established that the San Acacia site, which originally appeared to be hydrologically isolated from the surrounding area was, in fact, significantly influenced by the surrounding regional groundwater flow system. This is especially true in relation to salinity where over 50 percent of the total dissolved solids emission in drains originates from sources outside the farm. The models were modified to account for this external contribution.

Analysis of total dissolved solids data obtained from monitoring shallow wells underlying the irrigated area of the San Acacia site shows that there has not been a statistically significant change in the salinity of the shallow groundwater over the duration of the project. A significant increase in nitrate concentration in the shallow groundwater and the drains was observed as portions of the farm were converted from alfalfa to corn.

Extensive systematic observations of chemical and physical parameters of the subsurface flow system at the site show that these parameters are highly variable in time and space. The correlation scale of spatial variability is generally observed to be an order of magnitude larger in the horizontal direction than in the vertical.

A two-cell lumped parameter model, which emphasizes the dynamic nature of the water and mass balances, was found to adequately simulate the average monthly chloride concentration in the middle drain, despite the complexities of the real flow system.

A modified version of the Bureau of Reclamation model adequately simulated steady-state average water quality at the end of a 30 year period but the modified model was not able to simulate the observed seasonal variation of salinity emissions from the site during the monitoring period. The chemical reactions included in the Bureau of Reclamation model did not have a significant effect on the predictions at the San Acacia site.

SECTION 3

MONITORING

METHODS AND PROCEDURES

The selected field site is located along Interstate 25, 15 miles north of Socorro, at San Acacia, New Mexico, on the property of Mr. Gordon Herkenhoff. This farm was chosen because it was thought to be hydrologically isolated from the surrounding area, and could be instrumented and monitored without great difficulty to ascertain the quality of the irrigation return flow and its contribution to the quality of the downstream water. The experimental area on the farm covers about 100 hectares. Figure 1 shows that the farm is bordered on the west by Interstate 25 and on the east by the Rio Grande Main Conveyance channel. The area to the north of the farm increases in elevation and is non-cultivated semi-desert rangeland. This area and the area northwest and west of the freeway most probably contribute to flow in the main drain around the farm. To the south the farm is bordered by non-cultivated bosque largely covered with saltcedar and other trees.

Irrigation

The farm is irrigated with water from the Middle Rio Grande Conservancy District. A large irrigation canal runs parallel to the main conveyance canal along the east side of the farm. Samples of the applied irrigation water are collected from the canal at the entrance to the Alamillo Ditch (location 22 on Figure 1). The water in the canal is a mixture of Rio Grande river water and unit 7 drain water. The unit 7 water is drainage from an agricultural area north of the study area.

Water is delivered from the canal to the farm through culverts. Two Parshall flumes were installed to measure the water delivered through two of these culverts. Parshall flumes are good for monitoring quantities of irrigation water since they have very little head loss. Discharge through these flumes is computed from the water level in the flume and knowledge of the water level-discharge relationship of each flume. The flume water levels are measured using continuous recording devices. The accuracy of Parshall flumes is generally about plus or minus 3 to 5%. Water delivered through the third culvert was measured with a concrete cut-throat flume, which was built in place in a

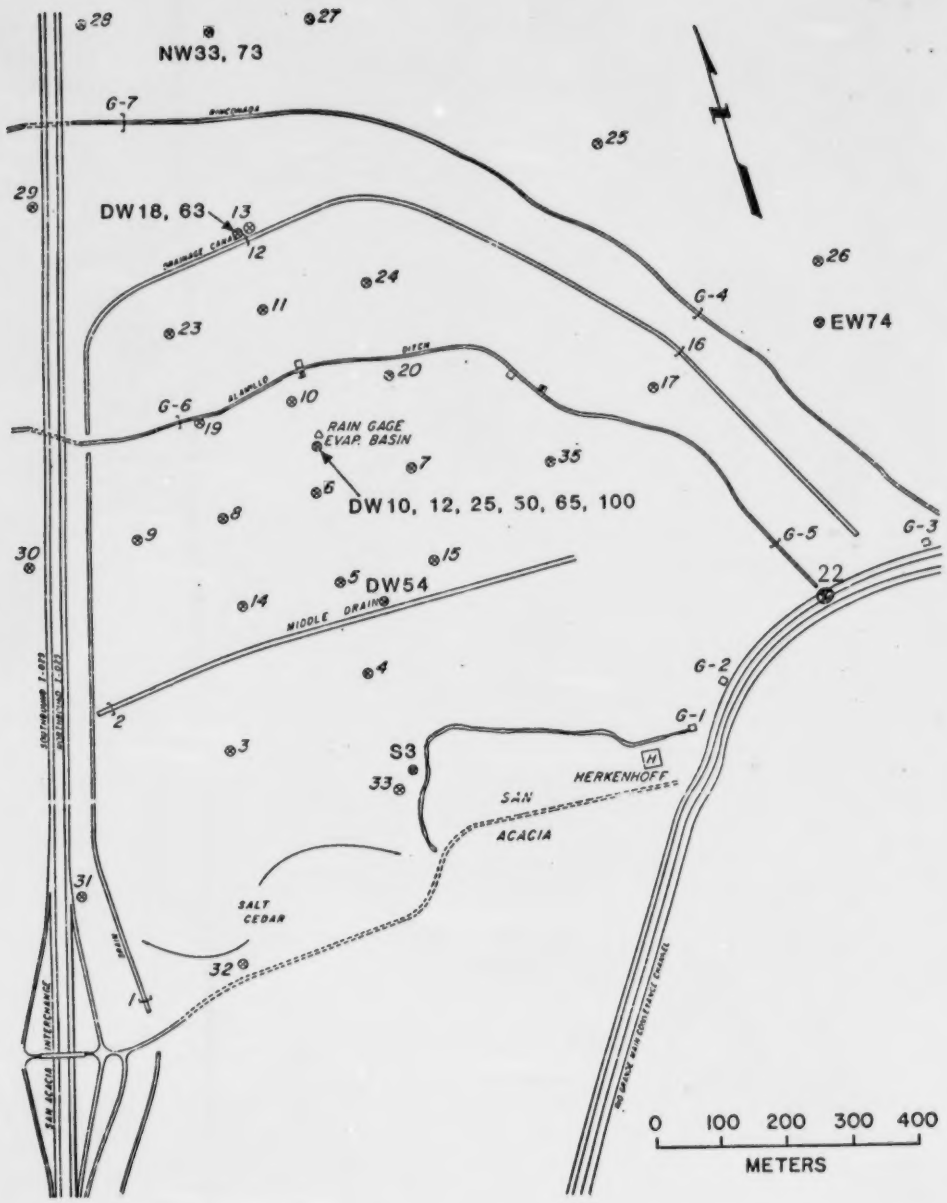

Figure 1. Map of the San Acacia, New Mexico site showing the location of wells, gaging stations and the evaporation station.

ditch below the culvert. Again a water stage recorder was installed to measure water levels in the flume. The location of these flumes shown in Figure 1 are indicated as G-1, G-2, and G-3 (herein designated by G1, G2, G3).

A large portion of the farm is irrigated through the Alamillo ditch which runs east-west through the farm. Water level recorders at G-5, and G-6 (herein designated by G5 and G6) and current meters were used to establish relationships between water levels in the ditch and water flows through the ditch. Due to silting and dredging of the channel it was necessary to check these relationships frequently. The amount of irrigation water applied to the farm through this ditch was taken as the difference in discharge between the stations G5 and G6. A similar procedure was used for water from the Rinconada ditch. Two large Parshall flumes were installed at the G5 and G6 locations on the Alamillo ditch by the Bureau of Reclamation early in 1980. During the 1980 and 1981 irrigation seasons these structures were used to measure the flows on the Alamillo ditch. Over the course of this investigation the principle crop gradually changed from alfalfa to corn. Flood irrigation was employed for both crops. For corn only the furrows were flooded whereas for alfalfa the entire field was flooded. Corn generally required less water than alfalfa but the method of application remained the same.

Drain Flow and Surface Runoff

Drain flow was measured in the main drain near the Interstate 25 Interchange (Station 1) with a water stage recorder and a rating curve developed for this drain. The middle drain was measured just above its intersection with the main drain (Station 2). A 15-cm (6 inch) Parshall flume and a weir with a water stage recorder were used to measure the volume of water passing this station.

Surface runoff into the middle drain was measured with a portable Parshall flume for three irrigations during 1978, and one irrigation during 1979.

Groundwater

A network of 25 observation wells was installed in 1977 and 1978 to measure water table elevations and the quality of the shallow groundwater (See Figure 1). The wells consist of 3.8 cm (1.5 inch) galvanized pipe, manually driven into the soil to about 3 meters below the soil surface (1.2 to 1.5 m below the water table). Additional wells numbered 26-34 (See Figure 1) were installed in 1978 in the area bordering the farm to the north, west, and south. These latter wells, especially those to the north, often had to be driven to a much greater depth to reach groundwater. The lower end of each well pipe has narrow

slits, while the upper end of the pipe is closed with a screw cap, which is flush with the soil surface. Fifteen of the shallow wells were placed on a 150 m grid spacing (See Figure 1). Although the wells were maintained and sampled throughout the study period, crop rotation and cultivation sometimes required the removal of some wells for short periods of time. Water level measurements and water samples were taken at weekly intervals. In 1978 observation wells were constructed near the rain gage and evaporation pan to depths of 3.6 m (nominally 12 feet, designated DW12), 7.6 m (DW 25) and 15.2 m (DW 50) below the soil surface. In 1979 two additional wells were constructed at this same location to depths of 19.8 m (DW 65) and 31.1 m (DW 100), respectively. The wells were constructed with 3.8 cm (1 1/2 inch) ID plastic pipes perforated over the lower 0.6 m. The pipe for the 3.6, 7.6 and 15.2 m wells was placed in separate drill holes, but the 19.8 and 31.1 meter wells were constructed in the same drill hole. Cement was injected at the 24.4 m depth to prevent mixing of water from the 19.8 and 31.1 m depths through the drill hole. Well logs were kept of all drill holes.

Additional deep wells were installed between 1979 and the spring of 1981 in order to delineate the flow and water quality of water entering the farm. The depths and locations of these wells are: (1) 16.5 m (DW54) at the middle drain 2 near well 5, (2) 5.5 m (DW 18) and 19.2 m (DW 63) at the main drain near well 13, (3) 10.0 m (NW 33) and 22.3 m (NW 73) north of the farm approximately halfway between wells 27 and 28, (4) 22.6 m (EW 74) near well 26.

Water Data and Consumptive Use

A rain gage and a Class A U. S. Weather Bureau pan were placed in a small fenced off area between shallow wells 6 and 10 (See Figure 1 for the placement). During 1977, 1978, and 1979 the site of the weather pan was surrounded by alfalfa with an upwind fetch of approximately 150 m. During 1980 and 1981 the site was surrounded, partially (1980) and completely (1981), by corn. Evaporation data were recorded at 1 to 3 day intervals.

Consumptive use of the alfalfa and corn on the farm was computed from the pan evaporation data using the procedure described by Doorenbos and Pruitt (1975). With this procedure the evapotranspiration of a reference crop is computed first, and from this the actual evapotranspiration of the crop of interest. Doorenbos and Pruitt (1975) use grass as the reference crop. These authors define reference evapotranspiration, ET_o , as "the rate of evapotranspiration from an extended surface of 8 to 15 cm tall green grass cover of uniform height, actively growing, completely shading the ground and not short of water." The evapotranspiration of the alfalfa (ET_c) is then computed from:

$$ET_c = k_c \, ET_o \qquad (1)$$

where k_c is a crop coefficient, which depends on stage of development and prevailing climatic conditions. ET_c thus determined refers to the water use of a disease-free crop, growing in a large field (one or more hectares) under optimal soil conditions including adequate water and fertilizer and achieving full production potential of the crop under the given growing conditions. The reference crop evapotranspiration may be obtained from pan evaporation data with:

$$ET_o = k_p \, ET_{pan} \qquad (2)$$

where ET_{pan} is the evaporation from an evaporation pan (mm/day), and k_p is a pan coefficient.

For the computations relative humidity was estimated to vary between 40 and 70%, and total daily wind run at less than 175 km/day. The pan coefficient for these conditions should have a value of 0.8 (Doorenbos and Pruitt, 1975). This value was used throughout the period of calculations. The variation in crop coefficients for corn and alfalfa for the years 1978 and 1979 is shown in Figures 2-4. During initial growth stages when the ground is only partially covered and k_c values are low, soil evaporation is probably the dominant factor for water loss. Soil evaporation is small during full ground cover, except immediately after cutting and irrigation of alfalfa. From Figures 2-4, constructed according to Doorenbos and Pruitt (1975), a maximum value of 1.15 was selected for k_c just before harvesting (Doorenbos and Pruitt, 1975). It was estimated from field observations, that development of alfalfa was complete two to three weeks after cutting, and that transpiration would approach its relative maximum at this time. However, for the first cutting a slower approach to the maximum k_c value was assumed. During irrigation and rain, evaporation losses from soil without a full cover were assumed to be high, resulting in the use of higher k_c values. This is represented by the dashed lines in Figures 3 and 4a.

Sample Collection and Analysis

Water samples from the drains, the wells and the main irrigation canal were collected at one week intervals. A 500 ml sample was taken from each well after initial bailing of the well. In order to insure a fresh sample, one complete casing volume (1 to 3 liters) was bailed out before the sample was taken. The samples were filtered through a .45$_\mu$ filter and sent in an insulated cooler chest filled with ice to Las Cruces for analysis by the Soil and Water Testing laboratory of New Mexico State University. All samples were analyzed for electrical conductivity (decisiemens per meter:dsm^{-1}), pH and chloride concentration. Once a month, samples were also analysed for dissolved anions and cations (Ca, Mg, Na, K, Cl , HCO_3 , CO_3 , SO_4) and nutrients (NO_3-N, NH_4-N, total P and PO_4-P). The dissolved

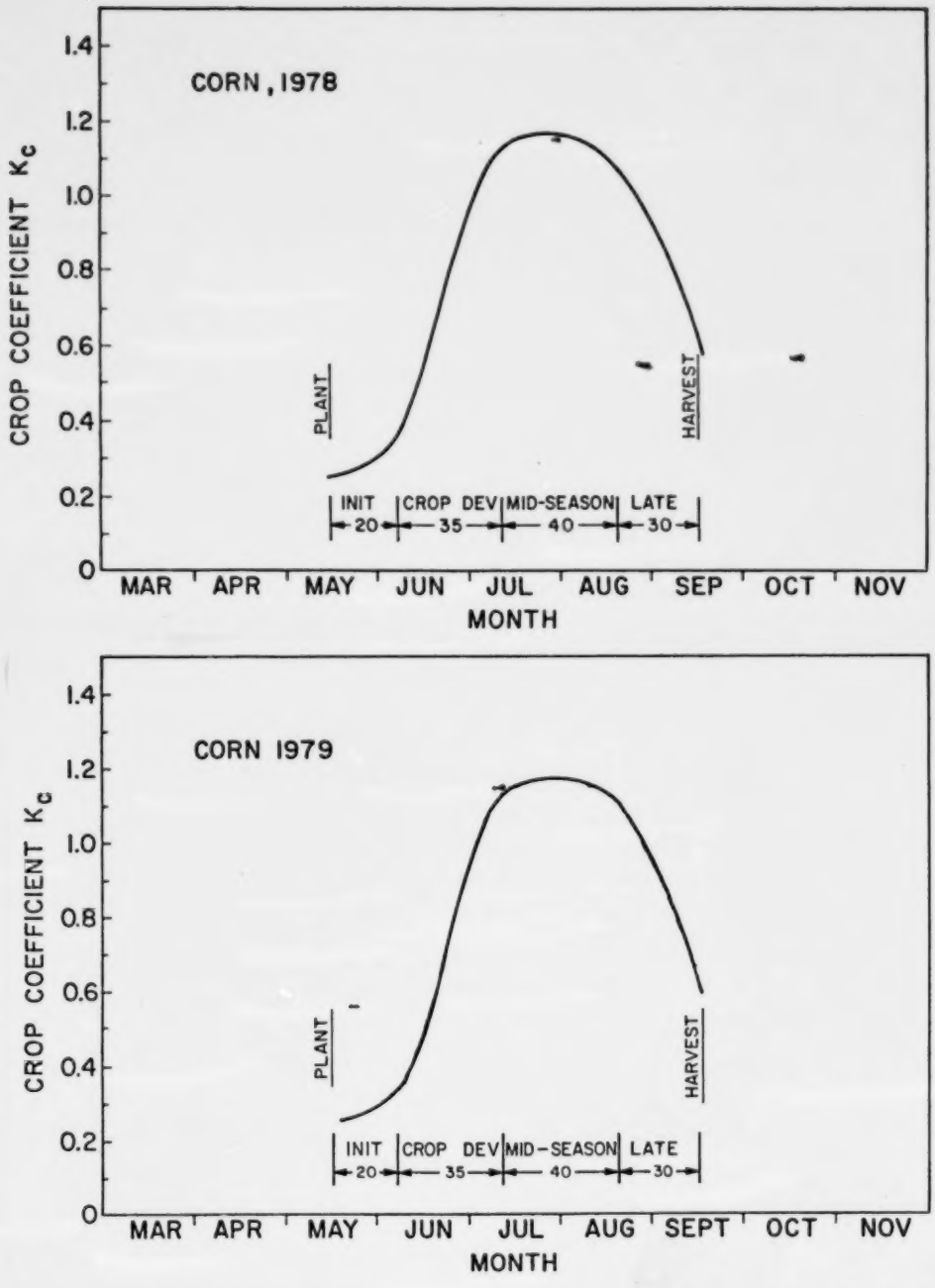

Figure 2. Variation of crop coefficient for corn for 1978 and 1979 growing seasons.

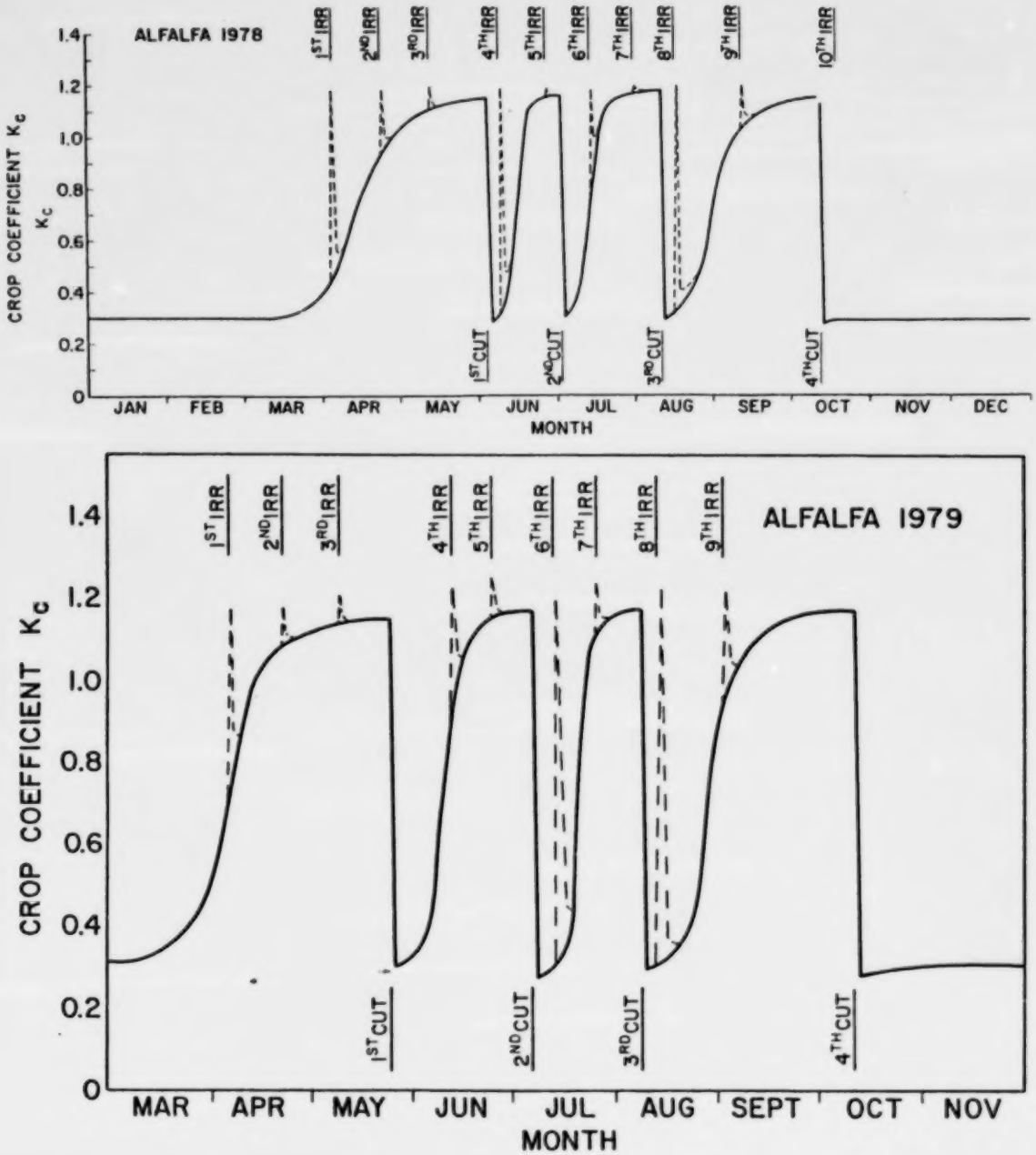

Figure 3. Variation of crop coefficient for alfalfa for 1978 and 1979 growing seasons.

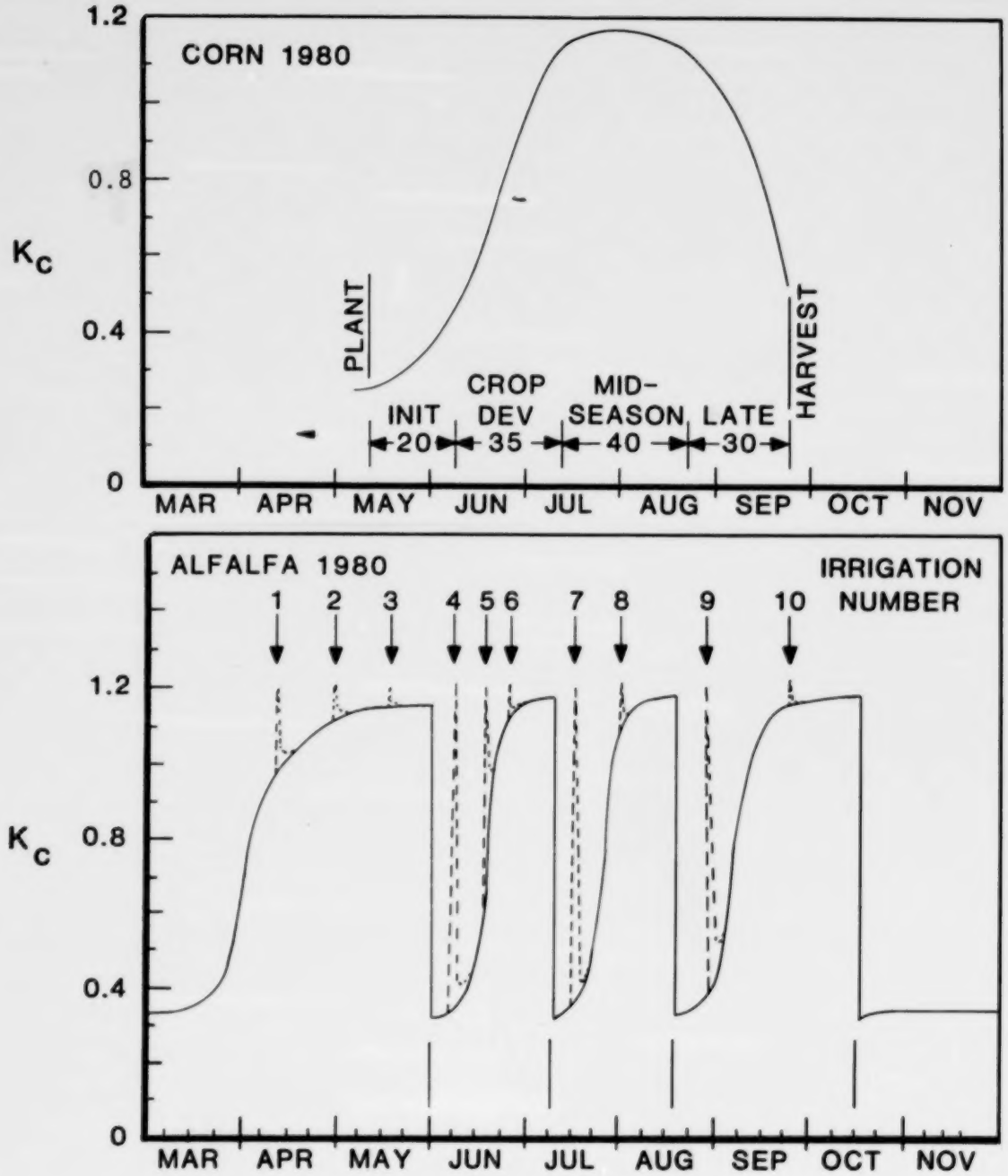

Figure 4a. Variation of crop coefficient for corn and alfalfa in 1980 growing season.

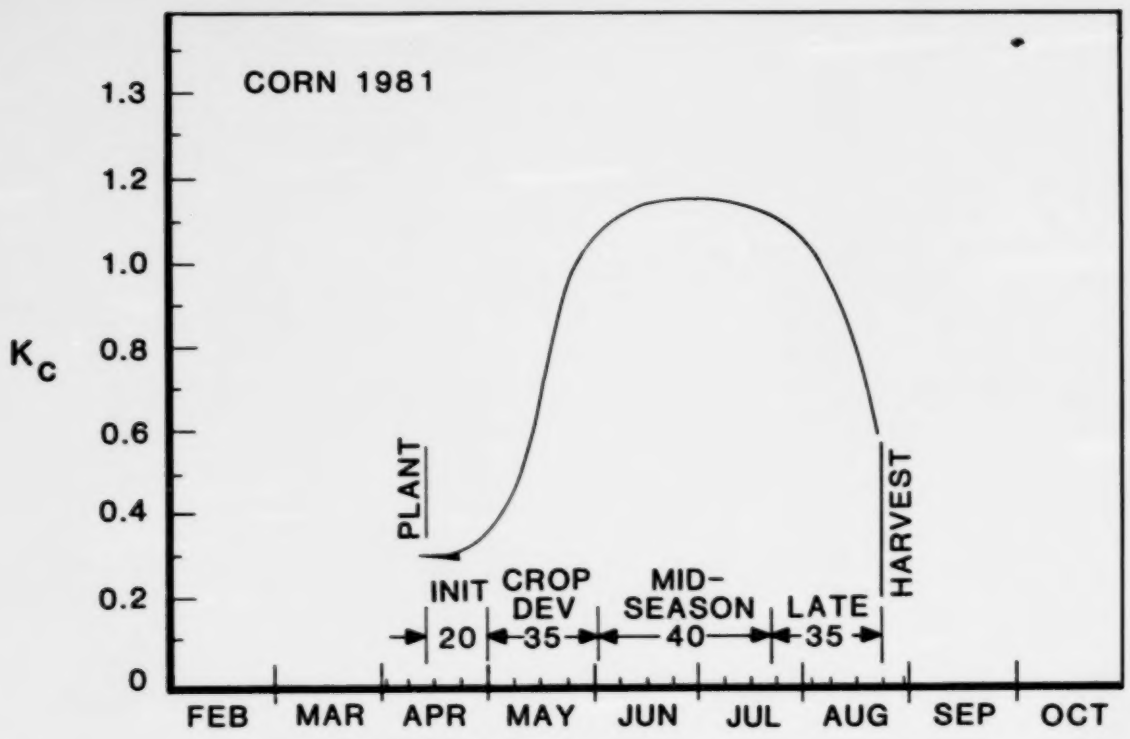

Figure 4b. Variation of crop coefficient for corn in 1981 growing season.

cations and anions were reported in milliequivalents per liter (meq/l). Nitrate and orthophosphate were usually reported in milligrams per liter (mg/l) of NO_3 and PO_4, respectivily. Occasionally the nitrogen (N) or phosphorous (P) in mg/l were reported. These are designated NO_3-N or NH_4-N, and PO_4-P respectivily. For the total analysis split samples were used, one acidified and one not.

The following procedures were used for analysis by the Soil and Water Testing Laboratory: calcium and magnesium by atomic absorption (Standard Methods, 1975); sodium and potassium by flame emission (Standard Methods, 1975); chloride by colorimetric, Automated Ferricyanide AAII (Standard Methods, 1975); carbonate and bicarbonate by titration with H_2SO_4 using phenolphthalein and methyl orange as indicators (Manual of Methods, 1975); sulfate with the Technicon Autonalyzer with methylthymol blue (Standard Methods, 1975); nitrate with the Technicon Autonalyzer with cadmium reduction (Standard Methods, 1975 and Manual of Methods, 1974); ammonia with the Technicon

Autonalyzer with phenate (Manual of Methods, 1974); total phosphorus by sulfuric acid ammonium-persulfate digestion in an autoclave followed by single reagent colorimetric method with ascorbic acid; and orthophosphate by the single reagent colorimetic method with ascorbic acid (Manual of Methods, 1974).

RESULTS AND DISCUSSION

General

The Section 208 project at this site started in the Spring of 1977, but much of 1977 was spent ordering equipment and installing flumes, weirs, water level recorders, and shallow wells. As a result, the data obtained during the 1977 irrigation season are rather limited. Inasmuch as the 1977 data were also presented in a previous report (Wierenga et al., 1979), this report presents mainly the data for 1978 and later.

When the project was first started most of the farm was in alfalfa, with only about 8.7 ha (22.0 acres) in corn (9% of the area). In 1978 the area in corn was expanded to 23.8 ha (59.0 acres), with the rest in alfalfa. In 1979 there were 54.9 ha (135.8 acres) in corn (56% of the area) and 43.7 ha in alfalfa. The area in corn (76.9 ha) became larger in 1980 and in 1981 the entire farm was planted in corn. The areas in corn and alfalfa during 1977, 1978, 1979, 1980 and 1981 are shown in Figures 5 through 9. The effects of the change in cropping pattern from alfalfa to corn on water use and return flow quality are presented later in this report.

The irrigation and cutting dates for the 1978 through 1981 alfalfa crop are presented in Table 1.

The groundwater levels showed large fluctuations during the irrigation season. An example of such fluctuations in groundwater level near the weather station is shown in Figure 10. This figure clearly shows the influence of irrigation on the groundwater level at the farm.

Water Balance

Irrigation Volumes--

The distribution of the applied irrigation water over the year for the 100 ha Herkenhoff farm during 1978 through 1981 is shown in Table 2. The accumulated total diversions for 1978 and 1979 are 179 cm and 154 cm respectively. For 1980 and 1981 the accumulated total diversions are 118 cm and 169 cm respectively. The smaller diversions in 1979, and 1980 probably resulted from the decrease in the acreage of alfalfa, and the increase in corn acreage. The increase in 1981 resulted from leasing the farm to an operator whose irrigation methods resulted in larger water

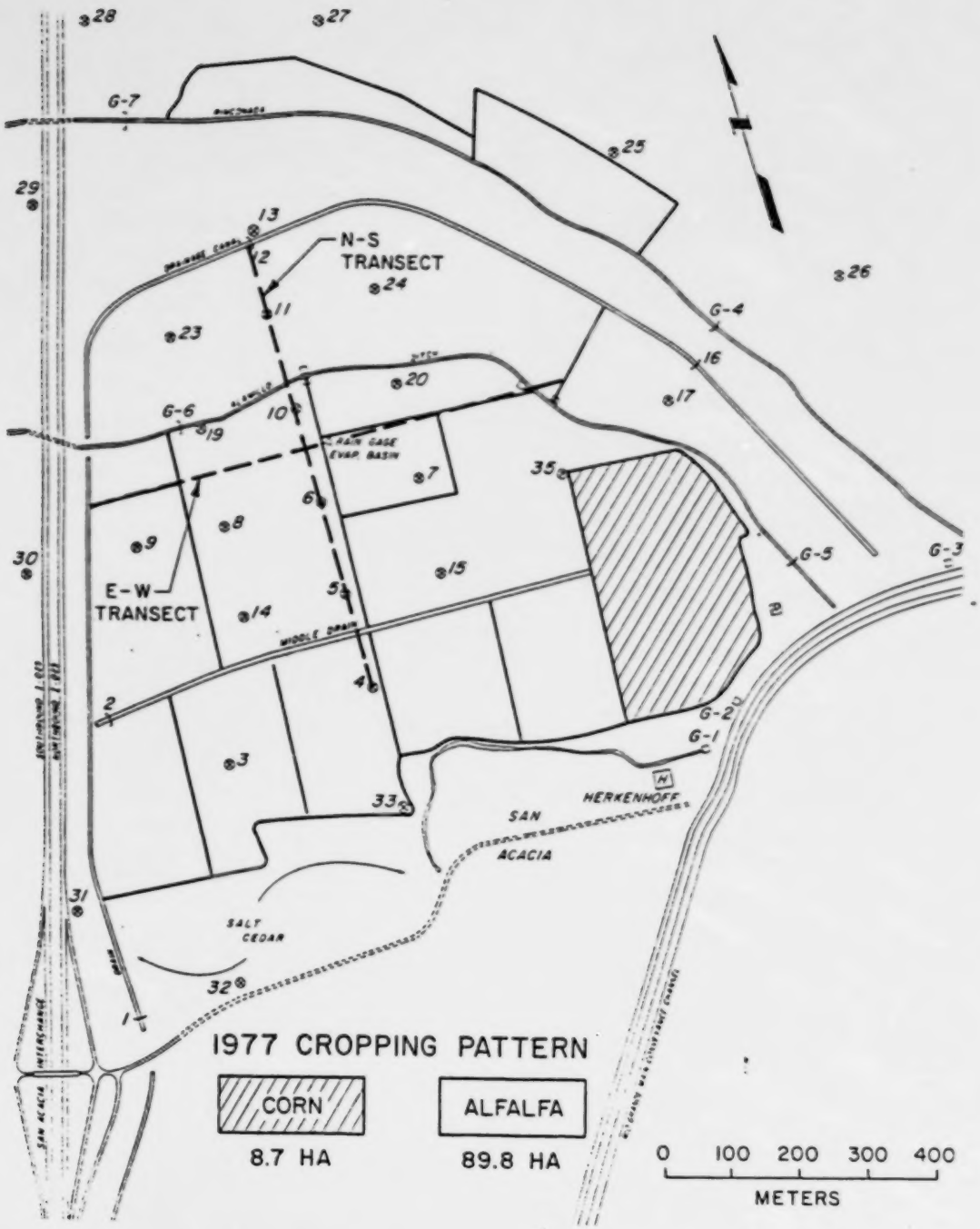

Figure 5. Cropping pattern in 1977.

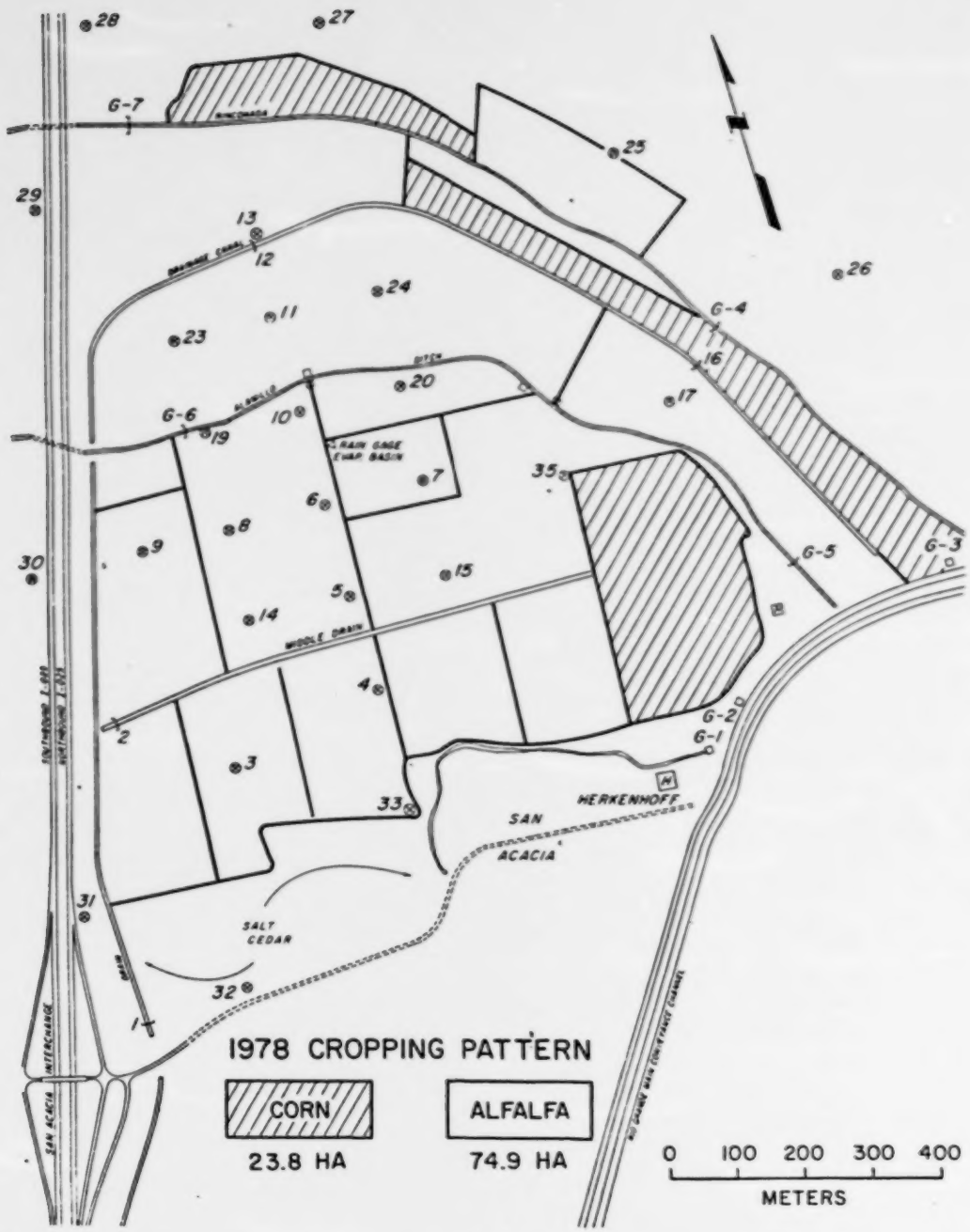

Figure 6. Cropping pattern in 1978.

Figure 7. Cropping pattern in 1979.

Figure 8. Cropping pattern in 1980. The arrows indicate the direction irrigation water was applied.

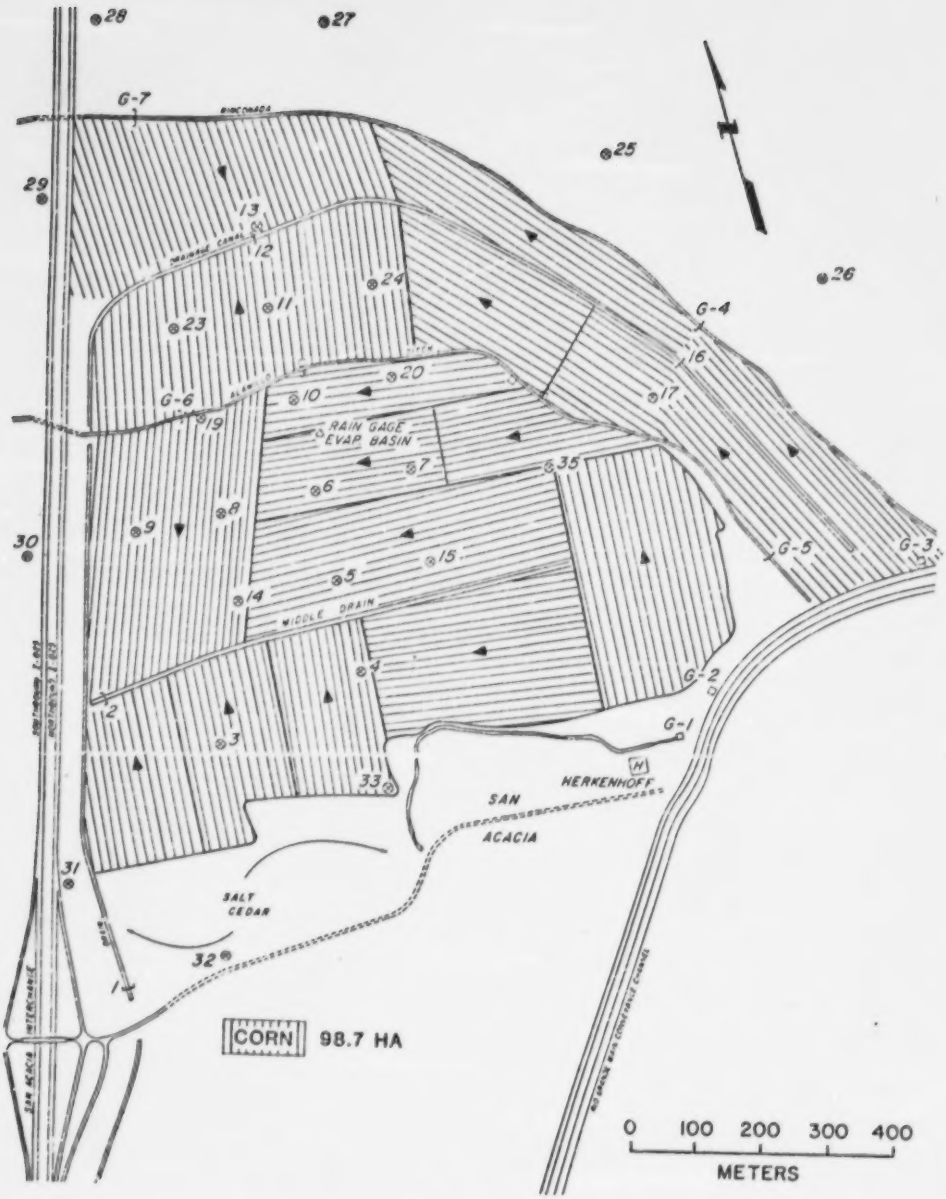

Figure 9. Cropping pattern in 1981. The arrows indicate the direction irrigation water was applied.

TABLE 1. Irrigation schedules. Dates for alfalfa in 1978, 1979 and 1980 with cutting dates and corn in 1981.

IRRIGATION DATE	IRRIGATION INTERVAL (DAYS)	CUTTING DATE	CUTTING INTERVAL (DAYS)
	1978		
4 Apr.		6 Jun.	
	18		28
24 Apr.		4 July	
	16		40
13 May		12 Aug.	
	24		61
9 June		12 Oct.	
	15		
27 June			
	15		
14 July			
	15		
31 July			
	15		
16 Aug.			
	25		
11 Sept.			
	37		
18 Oct.			
	1979		
4 Apr.		25 May	
	19		41
23 Apr.		5 July	
	18		33
11 May		7 Aug.	
	32		64
12 June		10 Oct.	
	14		
26 June			
	16		
12 July			
	14		
26 July			
	20		
15 Aug.			
	18		
25 Sept.			
	45		
17 Oct.			

(Continued)

TABLE 1 (continued)

1980-Alfalfa

9 Apr.		31 May	
	20		38
29 Apr.		8 June	
	26		41
25 May		18 Aug.	
	12		59
6 June		16 Oct.	
	10		
16 June			
	10		
27 June			
	18		
15 July			
	15		
31 July			
	28		
28 Aug.			
	28		
25 Sept.			

1981-Corn

20 Mar.	
	57
17 May	
	19
5 June	
	20
25 June	
	13
8 July	
	7
15 July	
	10
25 July	
	14
8 Aug.	
	42
19 Sept.	

- - - this irrigation is for newly planted alfalfa after harvest of corn in Aug. of 1981.

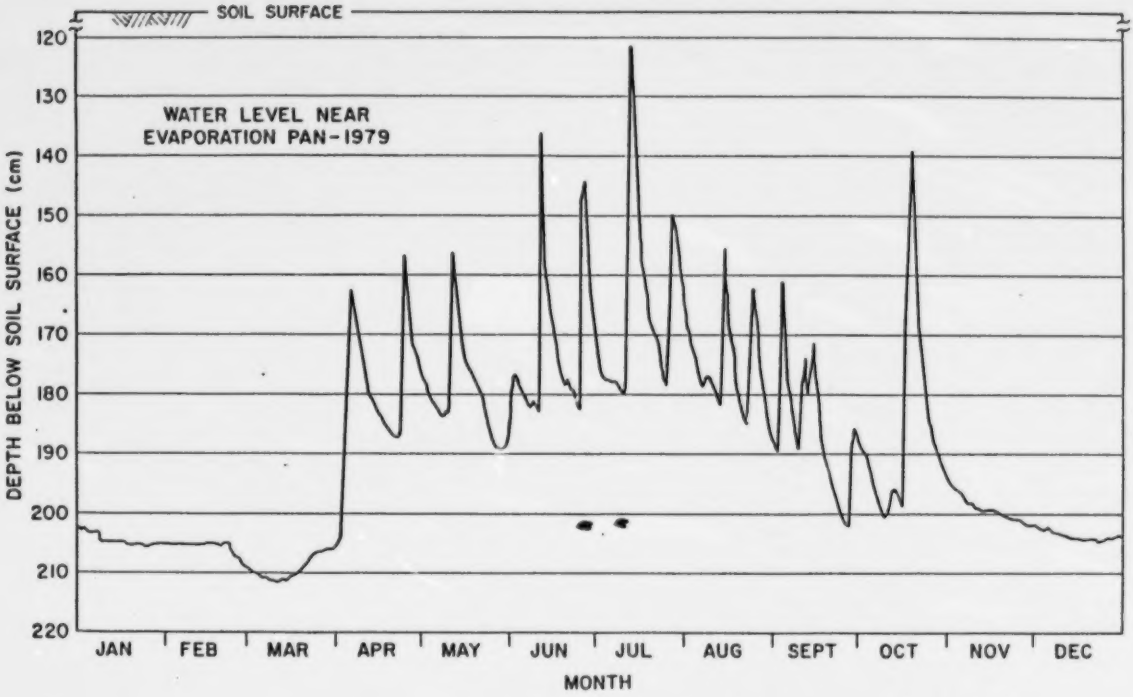

Figure 10. Groundwater level near evaporation pan in 1979.

applications. As is shown later, the consumptive use of corn is less than that of alfalfa, largely as a result of the shorter growing season of corn. The measured diversions shown in Table 2 include channel losses and tail water runoff. As such they somewhat over-estimate the amount applied to the field. However, at this farm these losses are assumed to be relatively small compared with the total volumes of water diverted.

Drain Flow and Surface Runoff--

Table 3 presents weekly drain volumes for the middle drain at station 2, where it intersects the outer drain. Inasmuch as the middle drain is in the center of the farm, its flow is less affected by drain flow from outside the farm boundaries. Drain flow in the outer drain, as measured at station 1, is to a large extent the result of underflow from the area surrounding the farm to the north and to the west. Cumulative drain volumes for 1978 through 1981 are also presented in Table 3.

The data in Table 3 show a small base flow during the winter of 1977-1978, probably as a result of the dry conditions prevalent in the Rio Grande Valley during the summer and fall of 1977. Baseflow conditions exceed $4000m^3$ per week during the 1978-1979 winter. The base flow during the 1979-1980 winter was

TABLE 2. Weekly diversions and cumulative diversions during the 1978 thru 1981 growing seasons.

DATE (WEEK)	cm	Σcm	DATE (WEEK)	cm	Σcm
1978			1979		
4/1-4/7	21.79	21.79	4/1-4/7	19.96	19.96
4/24/-4/30	12.85	34.64	4/8-4/15	10.08	30.04
5/8-5/15	11.53	46.17	5/8-5/15	10.27	40.31
6/8-6/15	19.89	66.06	6/8-6/15	23.01	63.32
6/16-6/23	17.82	83.88	6/24-7/7	13.14	76.46
7/8-7/15	10.34	94.22	7/8-7/15	13.47	89.93
8/1-8/7	22.43	116.65	7/24-7/31	21.09	111.02
8/16-8/23	20.55	137.20	8/8-8/15	16.15	127.17
9/8-9/15	22.54	159.74	9/16-9/23	12.04	139.21
10/16-10/23	19.32	179.06	10/16-10/23	14.69	153.90
1980			1981		
4/1-4/7	.8	.8	3/16-3/23	20.6	20.6
4/8-4/15	11.6	12.4	3/24-3/31	1.8	22.4
4/16-4/23	6.5	18.9	5/8-5/15	9.2	31.6
4/24-4/30	5.2	24.1	5/16-5/23	14.1	45.7
5/16-5/23	5.4	29.5	6/1-6/7	28.3	74.0
5/24-5/31	8.0	37.5	6/8-6/15	5.1	79.1
6/1-6/7	16.3	53.8	6/16-6/23	7.8	86.9
6/8-6/15	3.6	57.4	6/24-6/30	26.8	113.7
6/16-6/23	9.4	66.8	7/1-7/7	8.5	122.2
6/24-6/30	2.6	71.4	7/8-7/15	12.7	134.9
7/1-7/7	2.9	74.3	7/16-7/23	21.0	155.9
7/8-7/15	8.4	80.7	7/24-7/31	8.7	164.6
7/16-7/23	3.4	84.1	9/8-9/15	1.7	166.3
7/24-7/31	10.6	94.7	9/16-9/23	0.9	167.2
8/1-8/7	4.6	99.3	9/24-9/30	1.79	168.9
8/8-8/15	2.6	101.9			
8/24-8/31	4.6	106.5			
9/1-9/7	7.0	113.5			
9/24-9/30	4.4	117.9			

slightly below that of the previous winter while during the 1980-1981 winter the base flow was similar to that during the 1978-1979 winter. It is clear that the total drain flow in 1979 was significantly higher than in 1978, even though the amount of water applied in 1979 was less than in 1978 (Table 1). Assuming an off season baseflow of 74 m^3 per week in 1978, and of 4683 m^3 per week in 1979, the total drainflow during the 1978 irrigation season was about 237,000 m^3, and about 330,000m^3 during the 1979 season. This represents nearly a 40% increase in drainflow at

TABLE 3a. Weekly drainage volumes and cumulative drainage volumes at station 2 during 1978.

DATE	m^3	Σm^3	DATE	m^3	Σm^3
1/1-1/7	445.3	445.3	7/1-7/7	10,725.5	130,415.6
1/8-1/15	445.3	890.6	7/8-7/15	14,728.0	145,143.6
1/16-1/23	308.3	1198.9	7/16-7/23	13,710.5	158,854.1
1/24-1/31	376.8	1575.7	7/24-7/31	6853.2	165,707.3
2/1-2/7	308.3	1884.0	8/1-8/7	18,186.2	183,893.5
2/8-2/15	445.3	2329.3	8/8-8/15	7310.0	191,203.5
2/16-2/23	873.5	3202.8	8/16-8/23	13,985.8	205,189.3
2/24-2/28	770.8	3973.6	8/24-8/31	4061.8	209,251.1
3/1-3/7	976.3	4949.9	9/1-9/7	2691.5	211,942.6
3/8-3/15	770.8	5720.7	9/8-9/15	11,000.6	222,943.2
3/16-3/23	1027.7	6748.4	9/16-9/23	4222.9	227,166.1
3/24-3/31	137.0	6885.4	9/24-9/30	2040.3	230.106.4
4/1-4/23	7974.7	14,860.1	10/1-10/7	1837.2	231,943.6
4/8-4/15	5633.9	20,494.0	10/8-10/15	1800.5	233,744.1
4/16-4/23	3036.1	23,530.1	10/16-10/23	4457.3	238,201.4
4/24-4/30	10,011.7	33,541.8	10/24-10/31	5293.2	243,494.7
5/1-5/7	5332.1	38,873.9	11/1-11/7	2960.7	246,455.4
5/8-5/15	10,023.9	48,897.8	11/8-11/15	3278.8	249,734.2
5/16-5/23	11,237.1	60,134.9	11/16-11/23	3132.0	252,866.2
5/24-5/31	8343.8	68,478.7	11/24-11/30	2921.9	255,788.1
6/1-6/7	10,598.9	79,068.6	12/1-12/7	4059.7	259,847.8
6/8-6/15	15,655.7	94,724.3	12/8-12/15	3915.0	263,762.8
6/16-6/23	12,358.6	107,082.9	12/16-12/23	4304.4	268,067.2
6/24-6/30	12,597.2	119,680.1	12/24-12/31	4963.0	273,030.2

TABLE 3b. Weekly drainage volumes and cumulative drainage volumes at station 2 during 1979.

DATE	m^3	Σm^3	DATE	m^3	Σm^3
1/1-1/7	4339.1	4339.1	7/1-7/7	9856.7	234,649.9
1/8-1/15	5845.9	10,185.0	7/8-7/15	21,246.8	255,896.7
1/16-1/23	6121.2	16,306.2	7/16-7/23	12,381.1	268.277.8
1/24-1/31	5827.6	22,133.8	7/24-7/31	18,308.5	286,586.3
2/1-2/7	4098.5	26,232.3	7/1-8/7	8278.5	294,864.8
2/8-2/15	3853.8	30,086.1	8/8-8/15	14,348.7	309,213.5
2/16-2/23	5055.8	35,141.9	8/16-8/23	9030.9	318,244.4
3/24-2/28	3401.1	38,543.0	8/24-8/31	13,586.1	331,830.5
3/1-3/7	4263.6	42,806.6	9/1-9/7	7489.4	339,319.9
3/8-3/15	4208.6	47,015.2	9/8-9/15	6000.9	345,320.8
3/16-3/23	4657.2	51,672.4	9/16-9/23	4269.7	349,590.5
3/24-3/31	4520.6	56,193.0	9/24-9/30	3240.0	352,830.5
4/1-4/7	18,351.4	74,544.4	10/1-10/7	5948.9	358,779.4
4/8-4/15	15,243.9	89,788.3	10/8-10/15	4314.6	363,094.0
4/16-4/23	13,206.9	102,995.2	10/16-10/23	16,953.6	380,047.6
4/24-4/30	15,219.4	118,214.6	10/24-10/31	5693.0	385,740.6
5/1-5/7	10,660.1	128,874.7	11/1-11/7	3142.2	388,828.8
5/8-5/15	15,337.7	144,212.4	11/8-11/15	3709.0	392,591.8
5/16-5/23	11,459.4	155,671.8	11/16-11/23	3868.1	396,459.9
5/24-5/31	9767.0	165,438.8	11/24-11/30	3064.7	399,524.6
6/1-67	10,168.7	175,607.5	12/1-12/7	2909.7	402,434.3
6/8-6/15	22,384.6	197,992.1	12/8-12/15	3244.1	405,678.4
6/16-6/23	12,842.9	210,825.0	12/16-12/23	3109.5	408,787.9
6/24-6/30	13,958.2	224,793.2	12/24-12/31	3009.6	411,797.5

TABLE 3c. Weekly drainage volumes and cumulative drainage volumes at station 2 during 1980.

DATE	m^3	Σm^3	DATE	m^3	Σm^3
1/1-1/7	2375.5	2375.5	7/1-7/7	10,111.8	197,360.8
1/8-1/15	2557.0	4932.5	7/8-7/15	14,683.4	212,044.2
1/16-1/23	2242.9	7175.4	7/16-7/23	13,254.0	225,298.2
1/24-1/31	2153.3	9328.7	7/24-7/31	13,254.0	238,552.2
2/1-2/7	1884.1	11,212.8	8/1-8/7	6900.3	245,452.5
2/8-2/15	2171.6	13,384.4	8/8-8/15	7428.4	252,880.9
2/16-2/23	2220.6	15,605.0	8/16-8/23	6219.2	259,100.1
2/24-2/29	1592.5	17,197.5	8/24-8/31	8684.5	267,784.6
3/1-3/7	1861.7	19,059.2	9/1-9/7	7466.1	275,250.7
3/8-3/15	2063.6	21,122.8	9/8-9/15	9699.9	284,950.6
3/16-3/23	2448.9	23,571.7	9/16-9/23	5748.2	290,698.8
3/24-3/31	2901.6	26,473.3	9/24-9/30	11,047.7	301,746.5
4/1-4/7	2893.5	29,366.8	10/1-10/7	5266.9	307,013.4
4/8-4/15	9673.4	39,040.2	10/8-10/15	4145.5	311,158.9
4/16-4/23	13,922.9	52,963.1	10/16-10/23	3058.6	314,217.5
4/24-4/30	11,280.2	64,243.3	10/24-10/31	3058.6*	317,276.1
5/1-5/7	10,283.1	74,526.4	11/1-11/7	3058.6*	320,334.7
5/8-5/15	9775.4	84,301.8	11/8-11/15	3058.6*	323,393.3
5/16-5/23	13,684.3	97,986.1	11/16-11/23	3058.6*	326,451.9
5/24-5/31	14,797.6	112,783.7	11/24-11/30	3058.6*	329,510.5
6/1-6/7	18,227.4	131,011.1	12/1-12/7	3058.6*	332,569.1
6/8-6/15	19,434.5	150,445.6	12/8-12/15	3058.6*	335,627.7
6/16-6/23	18,478.2	168,923.8	12/16-12/23	3058.6*	338,686.3
6/24-6/30	18,325.2	187,249.0	12/24-12/31	3058.6*	341.744.9

* estimated

TABLE 3d. Weekly drainage volumes and cumulative drainage volumes at station 2 during 1981.

DATE	m^3	Σm^3	DATE	m^3	Σm^3
1/1-1/7	4600.2	4600.2	6/1-6/7	23,851.1	194,705.9
1/8-1/15	5440.3	10,040.5	6/8-6/15	30,639.3	225,345.2
1/16-1/23	4924.4	14,964.9	6/16-6/23	8099.2	233,444.4
1/24-1/31	4451.3	19,416.2	6/24-6/30	29,752.3	263,196.7
2/1-2/7	3439.9	22,856.1	7/1-7/7	9726.4	272,923.1
2/8-2/15	3444.1	26,300.1	7/8-7/15	16,902.0	289,825.1
2/16-2/23	4278.0	30,578.1	7/16-7/23	25,101.1	314,926.2
2/24-2/28	4267.8	34,845.9	7/24-7/31	26,016.7	340,942.9
3/1-3/7	4682.8	39,528.7	8/1-8/7	5780.8	346,723.7
3/8-3/15	5097.7	44,626.4	8/8-8/15	4039.4	350,763.1
3/16-3/23	31,501.8	76,128.2	8/16-8/23	3150.4	353,913.5
3/24-3/31	4702.3	81,830.5	8/24-8/31	2699.7	356,613.2
4/1-4/7	6178.4	88,008.9	9/1-9/7	2577.4	359,190.6
4/8-4/15	6657.6	94,666.5	9/8-9/15	2836.4	362,027.0
4/16-4/23	7136.8	101,803.3	9/16-9/23	5591.2	367,618.2
4/24-4/30	8978.1	110,781.4	9/24-9/30	4561.4	372,179.6
5/1-5/7	8525.4	119,306.8	10/1-10/7	4771.5	376,951.1
5/8-5/15	9332.9	128,639.7	10/8-10/15	4541.0	381,492.1
5/16-5/23	29,014.1	157,653.8	10/16-10/23	18,788.1	400,280.2
5/24-5/31	13,201.0	170,854.8			

station 2 from 1978 to 1979. The drainflow decreased in 1980 due to a smaller baseflow and less diverted water. During 1981 the drainflow increased above that of 1980 even without the last two months of data. The greater diverted water in 1981 is probably the reason for the increase.

Although few detailed measurements were made, tailwater runoff also appeared to be more of a problem in 1979 than in 1978. Tailwater causes peaks in the daily drain flow, since this water runs directly into the drain during irrigation. Figure 11 shows the daily fluctuation in drainflow at station 2 during 1979. The peaks in the drainflow curve in Figure 11 are caused by both tailwater runoff directly into the drain during and immediately after each irrigation, and by the increased drainflows resulting from each irrigation.

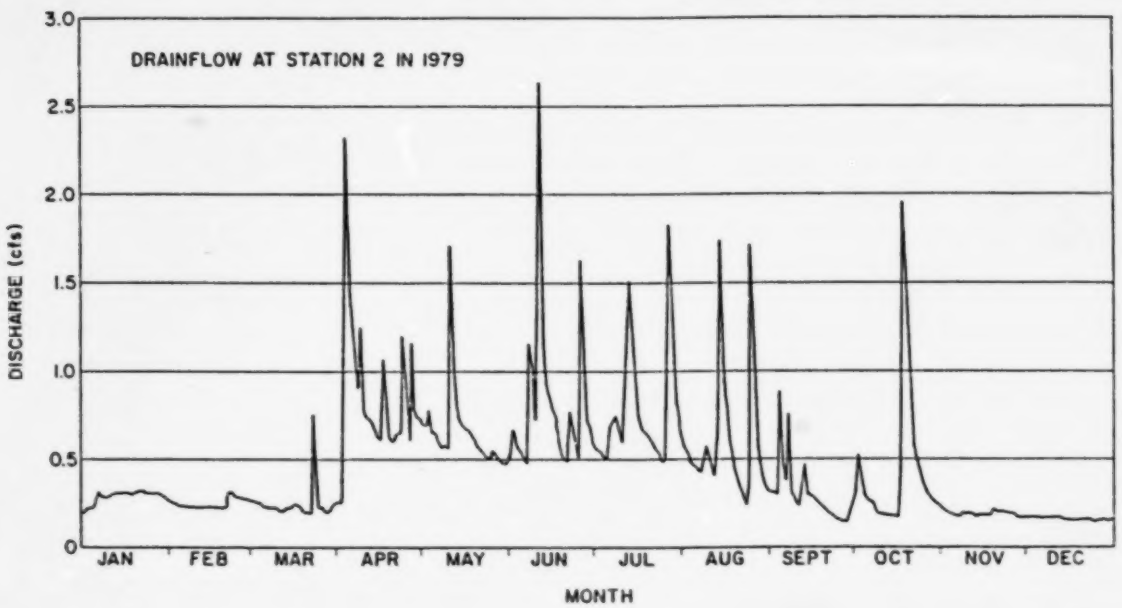

Figure 11. Daily variation in drainflow at station 2 during 1979.

Precipitation and Pan Evaporation--

The rainfall data for 1978 through 1980 are presented in Table 4. In 1978 the total rainfall was 217.7 mm, and in 1979 it was 234.7 mm. In 1980 and 1981 the total rainfall was 225.0 mm and 130.31 mm, respectively. Note that 1981 was not a complete year.

TABLE 4a. Precipitation and cumulative precipitation.

1978 PERIOD	mm/week	Total mm	1979 PERIOD	mm/week	Total mm
1/8-1/15	1.3	1.3	1/1-1/7	8.4	8.4
1/24-1/31	6.9	8.2	1/8-1/15	1.3	9.7
2/1-2/7	15.02	23.4	1/16-1/23	2.3	12.0
2/8-2/15	3.0	26.4	1/24-1/31	3.8	15.8
2/16-2/23	10.02	36.6	2/16-2/23	11.9	27.7
3/1-3/7	4.6	41.2	4/8-4/15	2.3	30.0
5/1-5-7	29/0	70.2	4/24-4/30	5.3	35.3
5/8-5/15	2.5	72.7	5/1-5/7	13.0	48.3
5/16-5/23	9.7	82.4	5/8-5/15	5.9	54.2
6/1-6/7	3.8	86.2	5/16-5/23	12.5	66.7
6/8-6/15	7.1	93.3	5/24-5/31	8.1	74.8
6/24-6/30	9.4	102.7	6/1-6/7	21.4	96.2
7/8-7/15	0.3	103.0	6/8-6/15	8.4	104.6
7/16-7/23	3.6	106.6	7/1-7/7	0.3	104.9
8/1-8/7	6.4	113.0	7/8-7/15	1.0	105.9
8/8-8/15	7.1	120.1	7/16-7/23	16.5	122.4
8/16-8/23	14.7	134.0	8/8-8/15	8.1	130.5
8/24-8/31	2.0	136.8	8/16-8/23	33.8	164.3
9/16-9/23	5.6	142.4	8/24-8/31	5.1	169.4
9/24-9/31	19.8	162.2	9/8-9/15	0.5	169.9
10/24-10/31	22.6	184.8	9/16-9/23	28.9	198.8
11/1-11/7	13.7	198.5	10/16-10/23	10.2	209.0
11/8-11/15	8.9	207.4	10/24-10/31	0.8	209.8
11/16-11/23	0.3	207.6	11/1-11/7	1.3	211.1
12/8-12/15	2.0	209.6	11/18-11/16	12.9	224.0
12/16-12/23	8.1	217.7	12/24-12/31	10.7	234.7

TABLE 4b. Precipitation and cumulative precipitation.

1980 PERIOD	mm/week	Total mm	1981 PERIOD	mm/week	Total mm
1/8-1/15	5.1	5.1	1/8-1/15	2.29	2.29
1/24-1/31	1.3	6.4	1/16-1/23	3.81	6.10
2/8-2/14	3.8	10.2	2/8-2/15	2.54	8.64
2/15-2/21	15.5	25.7	3/1-3/7	13.46	22.10
2/22-2/29	2.5	28.2	3/8-3/15	0.51	22.61
3/24-3/31	1.0	29.2	3/16-3/23	0.25	22.86
6/24-6/30	10.2	30.4	4/8-4/15	4.32	27.18
5/1-5/7	3.8	43.2	4/16-4/23	2.54	29.72
5/8-5/15	1.8	45.0	5/1-5/7	4.57	34.29
5/16-5/23	.5	45.5	6/1-6/7	3.30	37.59
6/8-6/15	26.9	72.4	6/24-6/30	1.27	38.86
6/16-6/23	1.3	75.7	7/1-7/7	6.10	44.96
7/8-7/15	4.0	77.7	7/8-7/15	4.32	49.28
7/16-7/23	2.3	80.0	7/24-7/31	2.79	52.07
8/1-8/7	18.3	98.3	8/1-8/7	1.52	53.59
8/8-8/15	32.0	130.3	8/8-8/15	2.79	56.38
8/16-8/23	23.1	153.4	8/24-8/31	17.02	73.40
8/24-8/31	6.1	159.5	9/1-9/7	22.10	95.50
9/1-9/7	1.3	160.8	9/8-9/15	3.05	98.55
9/8-9/15	51.8	212.6	9/24-9/30	3.56	102.11
11/16-11/23	1.5	214.1	10/1-10/7	22.10	124.21
12/8-12/15	10.1	225.0	10/24-10/31	6.10	130.31

The U. S. Class A pan evaporation data for 1978 through 1981 is presented in Table 5. The pan evaporation data was used to estimate consumptive use for alfalfa and corn during the two growing seasons.

Consumptive use--

Consumptive use data for alfalfa and corn are presented in Table 5. The cumulative consumptive use of alfalfa was calculated at 1251 mm in 1978, 1015 mm in 1979, and 1202 mm in 1980. For corn these values were 652, 558 mm, 650 mm and 805 mm for 1978, 1979, 1980, and 1981, respectively. As a result of its longer growing season, alfalfa used considerably more water than corn.

For later calculations on irrigation efficiency, only the consumptive use that occurs during the irrigation season is used. For alfalfa, the irrigation season cumulative consumptive use estimates are 1113 mm in 1978, 918 mm in 1979 and 954 mm in 1980. The estimates for corn remain the same.

To obtain the average irrigation season consumptive use for the farm, weighted averages were computed based on the areas in corn and alfalfa. With this procedure the consumptive use was 1002 mm in 1978, 717 mm in 1979, 717 mm in 1980, 805 mm in 1981.

The consumptive use estimates for the farm presented in Table 5 are approximate, but they are the best that could be made with the data that were available. Sources of possible error include less than optimum crop growth conditions due to lack of fertilizer or water or due to disease infestations during some time in the growth cycle, and the use of crop coefficient curves which were not tested in the Socorro area. Finally a pan coefficient of 0.8 may not have been correct.

Irrigation Efficiency Based on Consumptive Use--

With the farm area weighted consumptive use data and the volumes of irrigation water applied, farm irrigation efficiency may be computed as follows:

$$\text{Farm irrigation efficiency} = \frac{\text{consumptive use}}{\text{irrigation water applied}} \qquad (3)$$

TABLE 5a. Weekly values of pan evaporation, potential evapotranspiration and calculated mean consumptive use for alfalfa during 1978

Week	Mean E_{pan} mm/day	Mean ET_o mm/day	k_c	Mean ET_c mm/day	Total ET_c mm/day	ΣET_c mm
1/1-1/7	1.85	1.48	0.30	0.44	3.1	3.1
1/8-1/15	1.63	1.30	0.30	0.39	3.1	6.2
1/16-1/23	1.63	1.30	0.30	0.39	3.1	9.3
1/24-1/31	0.61	0.49	0.30	0.15	1.2	10.5
2/1-2/7	1.75	1.40	0.30	0.42	2.9	13.4
2/8-2/15	0.61	0.49	0.30	0.15	1.2	14.6
2/16-2/23	2.03	1.63	0.30	0.49	3.9	18.5
2/24-2/28	3.07	2.46	0.30	0.74	3.7	22.2
3/1-3/7	8.20	6.56	0.30	1.97	13.8	36.0
3/8-3/15	10.44	8.35	0.31	2.59	20.7	56.7
3/16-3/23	10.44	8.35	0.32	2.67	21.4	78.1
3/24-3/31	10.64	8.51	0.36	3.06	24.5	102.6
4/1-4/7	10.97	8.78	0.70	6.15	43.0	145.6
4/8-4/15	8.38	6.71	0.63	4.23	33.8	179.4
4/16-4/23	9.25	7.40	0.83	6.14	49.1	228.5
4/24-4/30	8.86	7.09	1.00	7.09	49.6	278.1
5/1-5/7	8.48	6.79	1.04	7.06	49.4	327.5
5/8-5/15	8.81	7.05	1.12	7.90	63.2	390.7
5/16-5/23	7.90	6.32	1.12	7.08	56.6	447.3
5/24-5/31	8.71	6.97	1.15	8.02	64.1	511.4
6/1-6/7	8.31	6.64	0.60	3.98	27.9	539.3
6/8-6/15	11.13	8.90	0.70	6.23	49.8	589.1
6/16-6/23	8.97	7.17	0.94	6.74	53.9	643.0
6/24-6/30	6.22	4.98	1.15	5.73	40.1	683.1

(Continued)

TABLE 5a (Continued).

Week	Mean E_{pan} mm/day	Mean ET_o mm/day	k_c	Mean ET_c mm/day	Total ET_c mm/day	ΣET_c mm
7/1-7/7	7.49	5.97	0.40	2.40	16.8	699.9
7/8-7/15	8.05	6.91	0.57	3.94	31.5	731.4
7/16-7/23	6.99	5.59	1.07	5.98	47.8	779.2
7/24-7/31	8.41	6.73	1.15	7.74	61.9	841.1
8/1-8/7	7.11	5.69	1.17	6.66	46.6	887.7
8/8-8/15	8.10	6.48	1.17	7.58	60.7	948.4
8/16-8/23	5.56	4.45	0.33	1.47	10.3	958.7
8/24-8/31	7.19	5.75	0.50	2.88	23.0	981.7
9/1-9/7	6.55	5.24	0.84	4.40	30.8	1012.5
9/8-9/15	6.20	4.96	1.05	5.21	41.7	1054.2
9/16-9/23	6.24	4.99	1.11	5.54	44.3	1098.5
9/24-9/30	4.69	3.76	1.14	4.29	30.0	1128.5
10/1-10/7	5.53	4.43	1.15	5.09	35.6	1164.1
10/8-10/15	5.48	4.38	1.16	5.08	40.6	1204.7
10/16-10/23	4.04	3.24	0.30	0.97	7.8	1212.5
10/24-10/31	1.68	1.34	0.30	0.40	2.8	1215.3
11/1-11/7	2.02	1.62	0.30	0.49	3.4	1218.7
11/8-11/15	3.05	2.44	0.30	0.73	5.8	1224.5
11/16-11/23	2.54	2.03	0.30	0.61	4.9	1229.4
11/24-11/30	2.54	2.03	0.30	0.61	4.9	1234.3
12/1-12/7	2.54	2.03	0.30	0.61	4.9	1239.2
12/8-12/15	2.46	1.97	0.30	0.59	4.7	1243.9
12/16-12/23	2.13	1.71	0.30	0.51	4.1	1248.0
12/24-12/31	1.88	1.50	0.30	0.45	3.2	1251.2

k_p = 0.8 (Evaporation Pan Coefficient)

TABLE 5b. Weekly values of pan evaporation, potential evapotranspiration and calculated mean consumptive use for alfalfa during 1979.

Week	Mean E_{pan} mm/day	Mean ET_o mm/day	k_c	Mean ET_c mm/day	Mean ET_c mm/wk	ΣET_c mm
1/1-1/7	1.11	0.89	0.31	0.27	1.93	1.9
1/8-1/15	0.97	0.78	0.31	0.24	1.93	3.9
1/16-1/23	0.75	0.60	0.31	0.19	1.49	5.4
1/24-1/31	0.75	0.60	0.31	0.19	1.49	6.8
2/1-2/7	3.08	2.46	0.31	0.76	5.35	12.2
2/8-2/15	2.70	2.16	0.31	0.67	5.35	17.5
2/16-2/23	2.70	2.16	0.31	0.67	5.35	22.9
2/24-2/28	2.42	1.94	0.31	0.60	3.00	25.9
3/1-3/7	3.55	2.84	0.31	0.88	6.17	32.1
3/8-3/15	3.11	2.49	0.32	0.80	6.37	38.5
3/16-3/23	3.11	2.49	0.35	0.87	6.96	45.5
3/24-3/31	3.11	2.49	0.45	1.12	8.95	54.5
4/1-47	7.16	5.73	0.78	4.47	31.3	85.8
4/8-4/15	6.72	5.54	0.95	5.26	42.1	127.9
4/16-4/23	7.08	5.66	1.06	6.00	48.0	175.9
4/24-4/30	7.26	5.81	1.10	6.39	44.7	220.6
5/1-5/7	8.74	7.00	1.13	7.91	55.3	275.9
5/8-5/15	6.76	5.41	1.15	6.22	49.8	325.7
5/16-5/23	6.16	4.93	1.15	5.67	45.4	371.1
5/24-5/31	9.49	7.59	0.31	2.35	18.8	389.9
6/1-6/7	5.44	4.35	0.38	1.65	11.6	401.5
6/8-6/15	8.67	6.93	0.90	6.24	49.9	451.4
6/16-6/23	8.57	6.86	1.12	7.68	61.4	512.8
6/24-6/30	6.78	5.43	1.16	6.30	44.1	556.9

(Continued)

TABLE 5b (Continued).

Week	Mean E_{pan} mm/day	Mean ET_o mm/day	k_c	Mean ET_c mm/day	Mean ET_c	ΣET_c mm
7/1-7/7	5.19	4.15	1.17	4.86	34.0	590.9
7/8-7/15	6.83	5.46	0.30	1.64	13.1	604.0
7/16-7/23	5.87	4.70	0.63	2.96	23.7	627.7
7/24-7/31	7.05	5.64	1.14	6.43	51.4	679.1
8/1-8/7	7.77	6.21	1.16	7.21	50.4	729.5
8/8-8/15	6.60	5.28	0.31	1.64	13.1	742.6
8/16-8/23	4.86	3.89	0.35	1.36	10.9	753.5
8/24-8/31	6.32	5.05	0.60	3.03	24.3	777.8
9/1-9/7	5.66	4.53	1.00	4.53	31.7	809.5
9/8-9/15	4.90	3.91	1.10	4.30	34.4	843.9
9/16-9/23	3.08	2.46	1.15	2.83	22.7	866.6
9/24-9/30	5.37	4.30	1.17	5.03	35.2	901.8
10/1-10/7	4.43	3.54	1.17	4.14	29.0	930.8
10/8-10/15	4.35	3.48	1.18	4.11	32.8	963.6
10/16-10/23	4.67	3.73	0.29	1.08	8.7	972.3
10/24-10/31	3.52	2.82	0.30	0.85	6.8	979.1
11/1-11/7	3.76	2.61	0.30	0.78	5.5	984.6
11/8-11/15	2.34	1.87	0.30	0.56	4.5	989.1
11/16-11/23	3.16	2.53	0.30	0.75	6.1	995.2
11/24-11/30	3.88	3.10	0.31	0.96	6.7	1001.9
12/1-12/7	1.92	1.54	0.31	0.48	3.3	1005.2
12/8-12/15	1.68	1.34	0.31	0.42	3.3	1008.5
12/16-12/23	1.68	1.34	0.31	0.42	3.3	1011.8
12/24-12/31	1.68	1.34	0.31	0.42	3.3	1015.1

k_p = 0.8 (Evaporation Pan Coefficient)

TABLE 5c. Weekly values of pan evaporation, potential evapotranspiration and calculated mean consumptive use for corn during 1978.

Week	Mean E_{pan} mm/day	Mean ET_o mm/day	k_c	Mean ET_c mm/day	Mean ET_c mm/wk	ΣET_c
5/16-5/23	7.90	6.32	0.31	1.96	15.7	15.7
5/24-5/31	8.71	6.97	0.31	2.16	17.3	33.0
6/1-6/7	8.31	6.64	0.31	2.06	14.4	47.4
6/8-6/15	11.13	8.90	0.38	3.38	27.1	74.5
6/16-6/23	8.97	7.17	0.58	4.16	33.3	107.8
6/24-6/30	6.22	4.98	0.82	4.08	28.6	136.4
7/1-7/7	7.49	5.97	1.02	6.09	42.6	179.0
7/8-7/15	8.05	6.91	1.12	7.74	61.9	240.9
7/16-7/23	6.99	5.59	1.16	6.48	51.9	292.8
7/24-7/31	8.41	6.73	1.18	7.94	63.5	356.3
8/1-8/7	7.11	5.69	1.17	6.66	46.6	402.9
8/8-8/15	8.10	6.42	1.15	7.45	59.6	462.5
8/10-8/23	5.56	4.45	1.10	4.90	39.2	501.7
8/24-8/31	7.19	5.75	1.03	5.92	47.4	549.1
9/1-9/7	6.55	5.24	0.90	4.72	33.0	582.1
9/8-9/15	6.20	4.96	0.77	3.82	30.5	612.6
9/16-9/23	6.24	4.99	0.60	2.99	24.0	636.6
9/24-9/30	4.69	3.76	0.60	2.26	15.8	652.4

k_p = 0.8 (Evaporation Pan Coefficient)

TABLE 5d. Weekly values of pan evaporation, potential evapotranspiration and calculated mean consumptive use for corn during 1979.

Week	Mean E_{pan} mm/day	Mean ET_o mm/day	k_c	Mean ET_o mm/day	Mean ET_c mm/wk	ΣET_c mm
5/16-5/23	6.16	4.93	0.31	1.53	12.2	12.2
5/24-5/31	9.49	7.59	0.31	2.35	18.8	31.0
6/1-6/7	5.44	4.35	0.31	1.35	9.4	40.4
6/8-6/15	8.67	6.93	0.38	2.63	21.1	61.5
6/16-6/23	8.57	6.86	0.58	3.98	31.8	93.3
6/24-6/30	6.78	5.43	0.82	4.45	31.2	124.5
7/1-7/7	5.19	4.15	1.02	4.23	29.6	154.1
7/8-7/15	6.83	5.46	1.12	6.11	48.9	203.0
7/16-7/23	5.87	4.70	1.16	5.45	43.6	246.6
7/24-7/31	7.05	5.64	1.18	6.66	53.3	299.9
8/1-8/7	7.77	6.21	1.17	7.27	50.9	350.8
8/8-8/15	6.60	5.28	1.15	6.07	48.6	399.4
8/16-8/23	4.86	3.89	1.10	4.28	34.2	433.6
8/24-8/31	6.32	5.05	1.03	5.20	41.6	475.2
9/1-9/7	5.66	4.53	0.90	4.08	28.5	503.7
9/8-9/15	4.90	3.91	0.77	3.01	24.1	527.8
9/16-9/23	3.08	2.46	0.60	1.48	11.8	539.6
9/24-9/30	5.37	4.30	0.60	2.58	18.1	557.7

k_p = 0.8 (Evaporation Pan Coefficient)

TABLE 5e. Weekly values of pan evaporation, potential evapotranspiration and calculated mean consumptive use for corn during 1980.

Week	Mean E_{pan} mm/day	Mean ET_o mm/day	k_c	Mean ET_c mm/day	Mean ET_c mm/wk	ΣET_c mm
5/16-5/23	7.90	6.32	0.31	1.96	15.7	15.7
5/24-5/31	13.16	10.53	0.31	3.26	26.1	41.8
6/1-6/7	13.11	10.49	0.31	3.25	22.8	64.6
6/8-6/15	12.07	9.66	0.38	3.67	29.4	94.0
6/16-6/23	7.52	6.02	0.58	3.49	27.9	121.9
6/24-6/30	7.90	6.32	0.82	5.18	36.3	158.2
7/1-7/7	8.05	6.44	1.02	6.57	46.0	204.2
7/8-7/15	7.19	5.75	1.12	6.44	51.5	255.7
6/16-7/23	9.78	7.82	1.16	9.07	72.6	328.3
7/24-7/31	7.90	6.32	1.18	7.46	59.7	388.0
8/1-8/7	11.33	9.06	1.17	10.60	74.2	462.2
8/8-8/15	5.61	4.49	1.15	5.16	41.3	503.5
8/16-8/23	6.20	4.96	1.10	5.46	43.7	547.2
8/24-8/31	5.31	4.25	1.03	4.38	35.0	582.2
9/1-9/7	4.93	3.94	0.90	3.55	24.9	607.1
9/8-9/15	1.93	1.54	0.77	1.19	9.5	616.6
9/16-9/23	5.31	4.25	0.60	2.55	20.4	637.0
9/24-9/30	3.71	2.97	0.60	1.78	12.5	649.5

k_p = 0.8 (Evaporation Pan Coefficient)

TABLE 5f. Weekly values of pan evaporation, potential evapotranspiration and calculated mean consumptive use for alfalfa during 1980.

Week	Mean E_{pan} mm/day	Mean ET_o mm/day	k_c	Mean ET_c mm/day	Mean ET_c mm/wk	ΣET_c mm
1/1-1/7	1.11	0.89	.31	0.27	1.89	1.9
1/8-1/15	0.97	0.77	.31	0.24	1.92	3.8
1/16-1/23	0.75	0.60	.31	0.19	1.52	5.3
1/24-1/31	0.75	0.60	.31	0.19	1.52	6.9
2/1-2/7	3.08	2.46	.31	0.76	5.32	12.2
2/8-2/15	2.70	2.16	.31	0.67	5.36	17.5
2/16-2/23	5.33	4.26	.31	1.32	10.56	28.1
2/24-2/29	10.21	8.17	.31	2.53	15.18	43.3
3/1-3/7	9.58	7.66	.31	2.37	16.59	59.9
3/8-3/15	9.60	7.68	.32	2.46	19.68	79.6
3/16-3/23	12.32	9.86	.35	3.45	27.60	107.2
3/24-3/31	7.19	5.75	.50	2.88	23.04	130.2
4/1-4/7	8.20	6.56	.82	5.38	37.66	167.9
4/8-4/15	6.89	5.51	.95	5.24	41.92	209.8
4/16-4/23	9.91	7.93	1.05	8.33	66.64	276.4
4/24-4/30	7.39	5.91	1.10	6.50	45.50	321.9
5/1-5/7	6.32	5.06	1.14	5.77	40.39	362.3
5/8-5/15	9.75	7.80	1.15	8.97	71.76	434.1
5/16-5/23	7.90	6.32	1.15	7.27	58.16	492.2
5/24-5/31	13.16	10.53	1.15	12.11	96.88	589.1
6/1-6/7	13.11	10.49	.31	3.25	22.75	611.9
6/8-6/15	12.07	9.66	.36	3.48	27.84	639.7
6/16-6/23	7.52	6.02	.70	4.21	33.68	673.4
6/24-6/30	7.90	6.32	1.14	7.20	50.40	723.8

$k_p = 0.8$ (Evaporation Pan Coefficient)

(Continued)

TABLE 5f (Continued).

Week	Mean E_{pan} mm/day	Mean ET_o mm/day	k_c	Mean ET_c mm/day	Mean ET_c mm/wk	ΣET_c mm
7/1-7/7	8.05	6.44	1.17	7.53	52.71	776.5
7/8-7/15	7.19	5.75	.31	1.78	14.24	790.7
7/16-7/23	9.78	7.82	.39	3.05	24.40	815.1
7/24-7/31	7.90	6.32	.70	4.24	33.92	849.0
8/1-8/7	11.33	9.06	1.14	10.33	72.31	921.4
8/8-8/15	5.61	4.49	1.17	5.25	42.00	963.4
8/16-8/23	6.20	4.96	.31	1.54	12.32	975.7
8/24-8/31	5.31	4.25	.36	1.53	12.24	987.9
9/1-9/7	4.93	3.94	.76	2.99	20.93	1008.8
9/8-9/15	1.93	1.54	1.03	1.59	12.72	1021.6
9/16-9/23	5.31	4.25	1.14	4.85	38.80	1060.4
9/24-9/30	3.71	2.97	1.17	3.47	24.29	1084.6
10/1-10/7	4.64	3.72	1.17	4.35	30.45	1115.1
10/8-10/15	5.02	4.01	1.18	4.73	37.84	1152.9
10/16-10/23	3.21	2.57	.30	0.77	6.16	1159.1
10/24-10/31	3.52*	2.82	.30	0.85	6.80	1165.9
11/1-11/7	3.25*	2.60	.31	0.81	5.67	1171.6
11/8-11/15	2.34*	1.87	.31	0.58	4.64	1176.2
11/16-11/23	3.16*	2.53	.31	0.78	6.24	1182.5
11/24-11/30	3.88*	3.10	.31	0.96	6.72	1189.2
12/1-12/7	1.92*	1.54	.31	0.48	3.36	1192.5
12/8-12/15	1.68*	1.34	.31	0.42	3.36	1195.9
12/16-12/23	1.68*	1.34	.31	0.42	3.36	1199.3
12/24-12/31	1.68*	1.34	.31	0.42	3.36	1202.6

* estimated (pan frozen)

TABLE 5g. Weekly values of pan evaporation, potential evapotranspiration and calculated mean consumptive use for corn during 1981.

Week	Mean E_{pan} mm/day	Mean ET_o mm/day	k_c	Mean ET_c mm/day	Mean ET_c mm/wk	ΣET_c mm
4/16-4/23	8.13	6.50	.31	2.02	16.1	16.1
4/24-4/30	9.55	7.64	.32	2.44	17.1	33.2
5/1-5/7	13.13	10.51	.40	4.20	29.4	62.6
5/8-5/15	12.28	9.83	.55	5.40	43.2	105.8
5/16-5/23	10.35	8.28	.87	7.20	57.6	163.4
5/24-5/31	9.04	7.23	1.03	7.45	59.6	223.0
6/1-6/7	8.24	6.60	1.10	7.25	50.8	273.8
6/8-6/15	10.60	8.48	1.14	9.67	77.3	351.1
6/16-6/23	12.40	9.92	1.15	11.41	91.3	442.4
6/24-6/30	8.02	6.42	1.15	7.38	51.6	494.0
7/1-7/7	7.43	5.94	1.15	6.83	47.8	541.8
7/8-7/15	6.64	5.31	1.14	6.05	48.4	590.2
7/16-7/23	7.60	6.08	1.12	6.81	54.5	644.7
7/24-7/31	7.12	5.70	1.07	6.10	48.8	693.5
8/1-8/7	8.19	6.55	1.02	6.68	46.8	740.3
8/8-8/15	6.41	5.13	.87	4.46	35.7	776.0
8/16-8/23	7.51	6.00	.60	3.60	28.8	804.8

$k_p = 0.8$ (Evaporation Pan Coefficient)

The irrigation water applied also includes the precipitation. With equation (3) irrigation efficiencies are:

$$I.E. = \frac{1002}{1912} \times 100 = 52\% \text{ for 1978,}$$

$$I.E. = \frac{712}{1720} \times 100 = 42\% \text{ for 1979,}$$

$$I.E. = \frac{717}{1362} \times 100 = 53\% \text{ for 1980, and}$$

$$I.E. = \frac{805}{1769} \times 100 = 45\% \text{ for 1981.}$$

Water Quality

The results of the analyses of the samples collected from the irrigation, and drain water and from the shallow groundwater are presented in Appendix A. The weekly and monthly water quality data presented in Appendix A were used to compute annual means for each ionic species, pH and EC. These mean values are presented in Table 6.

Salinity of the groundwater--

The data in Table 6 show considerable variation in the salinity of the shallow groundwater over the farm area. In general, salinity levels are higher for the non-irrigated areas surrounding the farm. Table 7 summarizes the variation in electrical conductivity and chloride concentration, of wells inside and outside the irrigated areas. The large variations in electrical conductivity and chloride concentration are also evident from the relatively large standard deviation of the means.

Within the irrigated area the large variation in salinity is related to the extensive variation in the soil hydraulic properties, irrigation practices and cropping patterns. The salinity in the shallow wells is probably also related to their distance from an irrigation or drainage canal.

Irrigation Efficiency from Salinity Data--

Assuming steady-state conditions, and no chemical reactions in the flow system, a mass balance for the irrigation system can be found using,

$$Q_d \cdot C_d = Q_w \cdot C_w \qquad (4)$$

TABLE 6

Mean annual water analyses at the various sampling sites.

NOTES

Water elevation is in meters above a datum 1,400 meters above mean sea level. Station numbers 1, 2, 12, 16 represent gage height in feet.

Specific conductivity in decisiemens/meter (dsm^{-1})

Cations and anions in meq/l.

NO_3 in mg/l of NO_3^-

P is mg/l of PO_4^{-3}

TDS in mg/l

Station numbers 1-35 correspond to sample locations in Figure 1;

Numbers 51-60 are as follows:

51 - DW25	56 - DW18
52 - DW50	57 - DW63
53 - DW65	58 - NW33
54 - DW100	59 - NW73
55 - DW54	60 - EW74

(Continued)

TABLE 6 (Continued)

1977

STATION NUMBER	WATER ELEVATION	SPEC. COND.	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS
1	0.89	2.81	7.98	17.17	8.55	3.86	0.28	29.86	12.21	0.15	4.17	12.31	29.36	1.46	0.02	1923.
2		2.53	8.00	14.41	8.99	3.75	0.28	27.45	10.09	0.69	4.60	11.63	26.94	0.35	0.04	1783.
3	18.65	3.00	7.74	21.11	14.21	5.17	0.33	40.82	4.42	0.46	9.30	26.93	41.03	2.40	0.04	2864.
4																
5	19.06	1.43	8.00	5.72	6.59	1.74	0.34	14.39	2.61	0.28	5.78	5.84	14.55	8.42	0.03	1021.
6	19.13	2.44	7.82	11.12	11.74	5.10	0.30	28.49	2.93	0.42	6.29	18.23	28.28	0.48	0.09	1942.
7	19.29	2.44	7.90	11.99	12.36	4.12	0.24	28.71	4.02	0.40	7.74	16.19	28.32	10.54	0.06	1985.
8	18.93	3.00	7.79	16.68	11.13	4.84	0.31	33.09	3.99	0.25	7.54	21.74	33.22	0.37	0.14	2329.
9	18.65	3.14	7.92	19.11	11.44	4.55	0.30	35.41	7.08	0.28	6.78	20.77	35.50	0.39	0.02	2404.
10	19.25	1.82	7.92	9.94	6.82	2.50	0.20	19.46	2.97	0.36	7.86	8.71	19.60	5.32	0.02	1407.
11	19.27	1.33	8.04	5.83	5.85	1.31	0.15	13.17	2.34	0.29	5.04	5.85	13.29	3.52	0.04	945.
12	1.00	2.58	8.13	14.71	8.78	3.60	0.25	27.33	10.68	0.19	4.15	11.28	26.90	0.69	0.02	1768.
13																
14	18.84	2.06	7.88	9.32	11.99	1.97	0.14	23.43	4.23		8.06	10.91	23.18	0.74	0.01	1649.
15	19.41	1.50	8.12	6.64	6.04	2.34	0.11	15.13	2.90	0.40	4.68	6.84	14.61	27.50	0.02	1028.
16	0.89	1.70	8.12	9.51	5.17	2.05	0.17	16.90	6.08	0.22	3.93	6.85	17.06	0.19	0.03	1144.
17	19.22	1.48	8.22	8.14	5.18	1.57	0.19	15.08	2.97	0.77	5.14	6.28	15.24	1.78	0.15	1064.
18	18.93	3.31	7.70	16.18	15.94	6.39	0.72	39.22	7.70	0.09	7.44	23.31	39.35	2.47	0.08	2658.
19	18.97	1.46	7.70	7.16	6.52	2.14	0.24	16.06	2.46		7.61	6.24	16.12	0.56	0.01	1175.
20	19.32	1.80	7.92	10.10	7.75	2.76	0.23	20.84	3.05	0.21	8.45	9.11	20.74	1.37	0.03	1495.
21																
22		1.08	8.28	5.19	3.90	1.27	0.17	10.54	2.26	0.54	3.66	4.55	10.69	1.49	0.24	748.
23	19.01	1.53	7.87	7.31	7.33	2.07	0.26	16.98	2.68		6.43	7.92	17.25	5.09	0.01	1226.
24	19.31	2.79	7.51	11.72	14.78	4.64	0.59	31.72	3.73	0.04	8.24	20.13	36.01	0.64	0.02	2246.
25	20.14	3.10	7.94	19.57	8.38	3.70	0.29	31.93	13.77	0.19	3.32	14.80	32.29	0.27	0.01	2089.
26																
27	20.00	3.82	8.10						18.96							
28																
29																
30																
31																
32																
33																
34																
35																
51	19.04	2.77	7.37	12.45	8.86	5.48	0.37	27.16	6.16		7.54	16.36	28.48	0.35	0.01	1954.
52																
53																
54																
55																
56																
57																
58																
59																
60																

(Continued)

TABLE 6 (Continued).

1978

STATION NUMBER	WATER ELEVATION	SPEC. COND.	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS
1	0.89	2.64	8.31	16.36	9.05	3.82	0.25	29.50	10.91	0.37	4.68	12.73	29.00	0.47	0.03	1920.
2	0.42	2.48	8.29	13.93	9.06	3.58	0.27	26.84	9.48	0.27	4.78	12.08	26.55	0.15	0.06	1768.
3	18.74	2.50	7.98	14.08	11.64	4.01	0.28	30.80	4.01	0.34	8.88	17.43	30.94	0.96	0.04	2158.
4	19.06	1.70	8.08	9.76	7.49	2.72	0.14	20.29	3.57	0.19	7.08	8.69	20.17	3.04	0.02	1417.
5	19.16	1.22	8.02	6.31	6.14	1.67	0.25	14.36	2.18	0.20	5.36	6.24	14.23	3.59	0.09	1017.
6	19.22	2.54	7.94	10.88	14.07	6.26	0.34	31.54	3.14		8.04	20.47	31.56	0.36	0.02	2203.
7	19.41	2.09	8.10	9.93	10.69	3.17	0.21	24.00	3.80	0.17	7.63	12.72	24.35	0.19	0.03	1706.
8	18.99	2.91	7.98	20.03	12.44	4.87	0.33	37.55	5.29	0.11	8.44	22.87	37.29	0.20	0.03	2607.
9	18.69	3.49	8.03	20.30	13.99	6.37	0.32	40.96	8.77	0.19	7.63	23.99	40.47	0.05	0.01	2767.
10	19.33	1.82	8.06	10.91	8.08	2.87	0.15	22.01	2.88	0.26	9.83	8.96	22.10	0.60	0.02	1600.
11	19.33	1.30	8.11	6.19	6.35	1.45	0.13	14.09	2.09	0.21	6.13	5.68	14.05	2.91	0.02	1018.
12	1.57	2.36	8.27	13.95	8.41	3.28	0.24	25.88	9.28	0.34	4.60	11.07	25.52	0.50	0.02	1699.
13	19.18	2.20	8.15	13.60	7.02	2.63	0.22	23.46	7.86	0.12	4.77	10.55	23.39	2.33	0.01	1577.
14	18.91	2.40	8.06	12.03	14.54	3.07	0.10	29.73	4.57	0.19	9.26	15.29	29.46	0.78	0.01	2081.
15	19.32	2.80	8.20	15.30	12.67	4.51	0.21	32.91	6.32	0.36	7.86	18.30	32.88	0.40	0.01	2267.
16	2.14	1.78	8.29	9.04	5.62	2.06	0.17	16.89	5.30	0.47	4.23	6.64	16.76	0.30	0.03	1135.
17	19.39	1.39	8.09	6.93	6.43	1.90	0.15	15.41	2.63	0.28	6.54	5.98	15.40	3.61	0.02	1106.
18	19.14	4.25	7.88	24.25	21.95	9.35	0.80	56.35	9.70	0.33	9.50	35.47	55.72	0.42	0.01	3805.
19	19.11	1.56	8.03	7.67	8.05	2.59	0.16	18.48	2.58	0.28	8.07	7.70	18.78	0.18	0.01	1342.
20	19.52	2.32	8.18	14.10	9.80	3.66	0.21	27.77	3.95	0.57	10.15	12.89	27.49	0.29	0.01	1966.
21																
22		0.93	8.31	4.82	3.39	1.13	0.16	9.51	1.88	0.58	3.23	3.77	9.42	3.82	0.17	660.
23	19.14	1.26	8.17	6.30	6.26	1.69	0.10	14.35	1.96	0.34	6.41	5.63	14.37	7.27	0.02	1037.
24	19.47	2.51	8.00	9.90	15.32	4.57	0.55	30.35	2.62	0.23	7.93	19.46	30.32	3.51	0.01	2133.
25	20.21	2.90	8.10	18.96	7.89	3.42	0.25	30.52	13.22	0.09	2.99	13.73	29.97	0.68	0.01	1957.
26	19.45	5.61	8.39	51.45	7.67	5.80	0.44	65.35	9.39	0.56	6.51	48.41	64.86	0.45	0.01	4496.
27	20.17	3.19	8.28	21.74	7.17	3.66	0.26	32.84	14.77	0.23	3.36	14.27	32.43	3.23	0.01	2111.
28	19.96	2.56	8.17	17.27	5.76	2.83	0.22	26.08	10.26		2.18	13.20	25.74	2.90	0.06	1690.
29	19.54	2.61	8.28	15.91	8.91	3.25	0.41	28.39	9.18	0.15	3.97	14.44	27.73	3.38	0.01	1865.
30	18.59	2.50	7.76	12.92	11.86	4.26	0.26	29.29	2.81		5.80	22.11	30.72	0.07	0.01	2112.
31		6.20	8.41	43.21	11.51	7.81	0.73	63.26	38.75	0.28	11.62	11.24	61.89	0.15	0.01	3978.
32	18.42															
33	18.99	1.37	8.24	7.18	4.41	1.77	0.23	13.57	1.89	0.55	6.39	4.92	13.58	0.50	0.01	997.
34	19.59	1.88	8.04	9.28	7.03	2.52	0.30	19.92	3.35	0.38	7.41	8.49	19.98	0.08	0.01	1415.
35	19.32	3.23	7.99	17.04	14.87	5.94	0.33	36.28	13.82	0.12	5.84	16.81	35.52	0.14	0.01	2357.
51	19.71	3.29	8.26	23.85	7.05	3.51	0.37	34.79	15.36	0.44	4.71	15.87	36.28	0.60	0.04	2351.
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(Continued)

TABLE 6 (Continued).

1979

STATION NUMBER	WATER ELEVATION	SPEC. COND.	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO2	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS
1	1.11	2.87	8.16	16.70	8.89	3.74	0.26	29.22	11.25	0.13	4.76	13.22	29.00	0.99	0.16	1925.
2	0.35	2.58	8.19	15.06	9.88	3.74	0.25	28.79	9.78	0.31	5.46	12.80	28.39	0.19	0.08	1902.
3	18.77	2.92	8.14	19.14	10.84	5.63	0.27	35.89	4.54	0.10	9.29	21.81	35.75	0.46	0.09	2515.
4	19.14	2.19	8.19	12.75	7.34	2.58	0.17	21.71	4.67		8.63	10.24	21.59	15.09	0.09	1589.
5	19.24	0.99	8.05	4.70	4.93	1.30	0.32	11.45	1.53	0.08	5.98	3.57	11.28	0.80	0.41	835.
6	19.29	2.64	7.86	11.34	15.19	6.62	0.31	33.50	1.32	0.07	7.92	22.34	33.89	1.03	0.13	2344.
7	19.47	2.27	7.95	11.61	12.24	3.55	0.21	26.86	4.47	0.06	8.82	13.58	27.05	0.14	0.13	1884.
8	19.07	3.46	7.94	22.32	16.59	6.57	0.31	45.90	6.54		10.08	28.61	45.79	1.23	0.17	3184.
9	18.79	3.57	7.93	20.94	14.24	6.15	0.29	41.62	8.89	0.09	7.85	24.06	41.63	1.05	0.15	2831.
10	19.35	1.85	7.96	11.08	7.82	2.71	0.11	21.22	2.68	0.08	10.11	8.41	21.05	1.98	0.12	1545.
11	19.33	1.35	8.19	5.58	6.49	1.43	0.11	13.53	1.97	0.25	5.56	5.85	13.36	27.69	0.14	964.
12	1.85	2.39	8.17	13.68	8.56	3.36	0.23	25.84	9.91	0.09	4.67	11.48	25.67	0.90	0.11	1708.
13	19.22	2.46	8.06	14.47	8.92	3.13	0.39	26.49	8.32	0.14	5.35	12.02	26.38	9.57	0.11	1784.
14	19.00	2.19	7.98	11.68	11.23	2.55	0.08	25.97	3.91	0.04	9.17	12.81	25.84	0.54	0.15	1845.
15	19.40	3.02	8.10	17.28	15.31	5.63	0.18	37.01	7.24	0.05	9.32	20.35	36.69	0.41	0.16	2551.
16	2.05	1.64	8.17	9.22	5.69	2.06	0.17	17.17	5.06	0.06	5.11	6.85	16.83	0.44	0.09	1170.
17	19.47	1.39	7.97	6.26	6.42	1.88	0.15	14.79	2.32		7.08	5.59	14.96	3.62	0.11	1086.
18	19.31	5.79	7.77	37.01	25.66	14.63	0.93	79.32	16.72	0.11	14.27	48.08	78.77	0.33	0.24	5359.
19	19.10	2.23	7.95	13.23	11.89	3.68	0.22	27.96	4.45		10.30	13.26	28.19	0.21	0.10	2003.
20	19.55	2.98	7.99	18.58	12.93	5.31	0.18	37.34	5.93		11.83	19.66	37.88	0.18	0.12	2654.
21	19.70	0.77	8.14	4.34	1.86	0.67	0.23	7.15	1.60	0.06	2.06	3.52	7.14	0.18	0.09	505.
22		0.87	8.18	4.96	3.24	1.12	0.14	9.58	1.94	1.56	3.10	3.83	9.67	0.96	0.17	674.
23	19.09	1.49	8.11	6.57	8.13	2.17	0.09	16.42	1.82	0.15	6.64	7.53	15.96	78.68	0.04	1159.
24	19.50	1.76	8.21	7.77	6.38	1.55	0.08	15.78	2.20		7.14	7.04	16.39	2.10	0.11	1181.
25	20.40	2.83	8.07	18.34	8.04	3.47	0.23	29.92	12.52	0.09	3.41	13.95	30.07	0.91	0.11	1961.
26	19.57	5.63	8.41	54.75	6.48	5.30	0.39	66.38	9.53	0.11	6.55	44.75	60.36	0.24	0.33	4201.
27																
28	19.91	2.98	8.23	20.12	7.96	3.39	0.26	31.36	12.16		4.30	14.89	31.62	2.70	0.11	2067.
29	19.52	2.71	8.21	16.21	9.10	3.63	0.35	29.29	9.88	0.10	4.32	14.98	29.28	1.79	0.06	1949.
30	18.65	3.08	7.99	18.82	13.02	5.90	0.31	37.55	6.53		7.57	24.56	38.66	0.08	0.16	2650.
31		6.57	7.71	42.62	16.50	9.40	0.68	69.48	48.36		9.20	15.19	70.67	1.16	0.16	4383.
32	18.58															
33	19.09	1.37	8.22	7.97	5.85	2.36	0.23	16.26	1.78	0.36	8.13	5.73	16.37	0.78	0.09	1206.
34	19.63	2.12	7.97	12.30	9.45	3.56	0.29	24.20	4.21		8.69	11.52	24.86	0.26	0.12	1748.
35	19.39	3.43	8.06	24.31	13.21	6.20	0.36	40.46	14.15	0.05	7.04	18.17	39.96	0.19	0.16	2699.
36	19.39	3.84	8.09	28.17	10.01	5.00	0.41	43.59	21.74	0.11	4.32	16.97	43.63	0.78	0.23	2783.
37		3.66	8.23	22.89	11.84	4.57	0.32	39.63	22.99		2.49	14.80	40.28	0.20	0.08	2509.
38		1.73	8.16	13.30	3.57	1.67	0.18	18.41	8.15	0.52	2.86	5.48	18.11	0.10	0.12	1181.
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(Continued)

TABLE 6 (Continued).

1980

STATION NUMBER	WATER ELEVATION	SPEC. COND.	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS
1	0.96	2.62	8.22	18.31	8.91	3.85	0.26	31.33	11.80	0.70	4.31	14.24	31.04	1.45	0.03	2045.
2	0.32	2.46	8.23	16.18	9.71	3.70	0.26	29.93	9.57	0.12	5.47	14.18	29.88	0.18	0.02	2002.
3	18.83	3.01	7.96	18.19	14.39	6.45	0.37	39.38	4.23	0.29	9.06	26.41	39.64	0.15	0.02	2766.
4	19.16	1.75	8.29	10.38	6.49	3.40	0.19	20.40	3.48	0.47	7.78	8.73	20.30	20.04	0.02	1444.
5	19.19	0.90	8.22	4.25	4.11	1.35	0.26	9.96	1.37	0.09	5.76	2.72	10.01	1.72	0.21	742.
6	19.29	2.30	7.86	10.50	14.22	5.30	0.34	30.36	3.16	0.11	6.65	20.12	30.33	0.83	0.02	2102.
7	19.43	2.06	8.07	11.18	9.41	3.60	0.25	24.44	4.31	0.27	6.62	13.32	24.20	0.42	0.02	1693.
8	19.07	3.23	7.92	20.38	16.53	6.59	0.37	43.87	5.91	0.31	7.57	29.51	43.64	0.54	0.02	3004.
9	18.79	3.22	8.03	18.94	14.64	6.42	0.33	40.32	5.49	0.08	8.05	26.28	40.17	0.11	0.04	2779.
10	19.36	1.42	8.13	10.13	5.93	2.34	0.09	18.50	2.11	0.31	8.87	6.70	18.08	2.34	0.03	1334.
11	19.35	1.37	8.20	6.58	5.57	1.46	0.12	13.74	1.84		5.28	6.47	13.47	21.45	0.02	979.
12	1.69	2.53	8.25	15.53	9.25	3.71	0.25	28.75	11.78	0.54	4.30	12.57	29.07	2.51	0.02	1895.
13	19.29	2.37	8.12	15.05	8.19	2.75	0.23	26.22	8.95	0.18	4.55	12.55	26.26	8.92	0.01	1757.
14	19.01	1.94	8.13	13.62	8.33	1.99	0.12	24.05	3.00	0.24	9.16	11.28	23.72	0.51	0.02	1725.
15	19.36	2.96	8.17	19.38	12.72	5.13	0.21	37.45	7.24	0.52	7.85	21.08	37.44	0.45	0.02	2561.
16	2.98	1.75	8.29	9.61	6.18	2.20	0.17	18.15	4.76	0.65	4.69	8.29	18.05	1.06	0.02	1240.
17	19.56	1.45	8.23	8.61	4.39	2.14	0.26	15.39	4.78		3.08	7.18	15.37	1.57	0.02	1036.
18	19.50	5.47	7.68	36.54	24.43	15.87	0.85	77.09	16.69	0.14	11.19	48.59	78.22	0.45	0.02	5223.
19	19.11	3.47	8.01	16.31	9.00	4.34	0.20	29.86	4.53	0.20	9.86	14.27	29.80	1.10	0.03	2074.
20	19.56	3.03	7.99	19.56	12.64	5.24	0.15	37.59	6.82	0.14	8.14	22.46	38.02	13.18	0.03	2610.
21	19.58	0.95	8.24	5.57	1.98	1.14	0.22	8.85	2.84	0.04	1.81	4.39	8.78	0.32	0.02	611.
22		0.90	8.27	5.20	3.14	1.13	0.15	9.62	2.18	1.28	3.23	4.18	9.61	0.86	0.11	677.
23	19.16	1.41	8.29	7.52	5.55	1.70	0.11	14.88	1.95	0.79	5.65	6.39	14.82	76.31	0.02	1055.
24	19.55	1.60	8.18	9.11	8.55	2.08	0.37	20.13	1.75	0.15	6.49	11.65	20.08	6.27	0.02	1444.
25	20.48	2.79	8.02	19.72	8.36	5.60	0.28	31.91	13.70	0.03	3.23	15.04	32.09	0.17	0.02	2085.
26	19.60	4.99	8.26	50.85	6.49	5.15	0.37	62.85	10.22	0.25	6.09	47.11	63.68	0.12	0.02	4378.
27																
28	20.03	2.56	8.30	20.28	6.41	2.74	0.21	29.63	11.00	0.20	3.15	15.08	29.65	3.57	0.01	1948.
29	19.62	2.26	8.16	16.13	7.80	2.94	0.39	27.26	8.27	0.27	3.92	14.02	26.91	0.15	0.02	1807.
30	18.67	2.59	7.95	15.07	13.75	6.64	0.35	35.81	3.09		7.77	25.27	36.23	0.20	0.02	2514.
31		5.65	7.68	38.24	14.40	8.46	0.61	61.71	42.39		7.79	12.85	63.04	0.19	0.02	3890.
32	18.53															
33	19.07	1.36	8.28	7.89	5.72	3.41	0.28	16.47	2.11	0.93	7.32	5.92	16.34	0.32	0.02	1184.
35	19.64	2.01	8.10	13.12	6.92	3.06	0.24	23.33	3.09	0.48	8.39	10.74	23.38	0.84	0.01	1663.
51	19.41	3.36	8.17	18.98	13.13	5.64	0.35	38.08	15.77	0.15	4.55	17.83	37.86	0.42	0.02	2464.
52	19.40	3.75	8.21	24.14	12.90	5.52	0.39	42.95	22.26	0.25	3.76	17.44	42.66	0.39	0.03	2722.
53		3.41	8.13	20.54	14.02	5.50	0.32	40.38	22.03	0.30	2.60	15.72	40.38	0.71	0.06	2528.
54		1.86	8.22	13.54	3.54	2.65	0.22	19.95	11.98	0.38	3.05	4.55	19.68	0.30	0.03	1255.
55		3.23	8.02	21.98	10.02	4.87	0.37	37.24	20.93	0.40	1.43	14.52	36.94	0.07	0.04	2308.
56	19.31	3.77							22.15							
57	19.33	3.69							21.79							
58	20.20	2.48							10.80							
59	20.12	2.38							10.35							
60																

(Continued)

TABLE 6 (Continued).

1981

STATION NUMBER	WATER ELEVATION	SPEC. COND.	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS
1		2.91	8.32	15.84	9.01	3.56	0.28	28.69	12.20	0.60	4.11	12.61	28.67	2.63	0.02	1878.
2	0.27	2.53	8.30	13.80	8.99	3.16	0.24	26.19	10.45	0.79	4.61	11.58	26.14	1.90	0.03	1733.
3	18.74	3.12	7.98	16.14	10.40	5.23	0.33	32.10	4.16		7.49	20.82	31.87	0.14	0.01	2239.
4	19.03	2.03	8.23	11.38	6.91	3.22	0.24	21.74	4.47	0.70	6.75	10.50	21.67	12.54	0.01	1517.
5	19.11	1.08	8.45	4.25	4.57	1.35	0.28	10.45	1.71	0.55	4.69	3.92	10.64	15.76	0.35	760.
6	19.21	2.43	7.91	11.20	13.55	6.38	0.34	31.47	2.70		7.77	20.84	30.72	0.25	0.01	2170.
7																
8	19.02	3.37	7.96	18.46	13.77	7.35	0.56	40.14	5.99	0.40	6.44	26.96	39.59	0.22	0.01	2716.
9	18.68	2.98	7.91	11.56	15.88	7.04	0.34	34.82	6.22		6.76	22.12	35.04	0.01	0.01	2376.
10	19.29	1.48	8.31	8.32	5.07	2.48	0.23	16.10	2.27	0.74	7.93	5.57	16.25	2.76	0.01	1177.
11	19.25	1.38	8.38	6.74	5.77	4.23	0.11	13.86	2.68	0.45	4.59	6.46	13.52	57.05	0.01	965.
12		2.55	8.27	13.84	8.26	3.42	0.24	25.76	10.41	1.40	3.50	11.14	25.77	3.27	0.02	1673.
13	19.14	2.54	8.21	15.24	7.02	2.89	0.23	25.38	9.69	0.13	3.72	11.93	25.57	3.03	0.01	1686.
14	18.94	1.60	8.29	10.89	4.87	1.33	0.13	17.22	2.37	0.55	6.78	7.84	17.37	1.18	0.01	1254.
15	19.24	2.37	8.18	15.41	8.52	3.12	0.16	27.21	5.00	0.63	6.88	15.85	27.88	16.35	0.01	1929.
16	3.46	1.38	8.44	6.71	4.19	1.67	0.16	12.73	3.87	0.45	3.11	5.34	12.90	4.12	0.08	867.
17	19.44	1.96	8.37	12.05	5.78	2.78	0.24	20.85	5.44	0.44	2.15	9.33	20.83	0.03	0.04	1344.
18	19.14	3.04	8.19	15.48	11.38	6.09	0.41	33.36	5.18	0.23	5.14	23.24	33.28	1.71	0.02	2280.
19	19.15	2.03	8.28	13.89	5.40	2.65	0.19	22.17	3.58	0.84	8.70	9.65	22.47	1.44	0.01	1603.
20	19.47	2.20	8.10	13.60	8.84	2.90	0.11	25.45	4.52		9.34	12.18	25.60	2.05	0.01	1829.
21	19.38	1.21	8.37	7.21	3.58	1.79	0.23	12.81	3.41	0.20	2.80	5.84	12.93	0.33	0.02	871.
22		1.04	8.39	5.85	3.83	1.26	0.17	11.11	2.12	0.53	3.58	4.58	11.04	1.21	0.11	770.
23	19.19	1.38	8.34	7.06	4.43	1.45	0.11	13.38	1.80	0.29	4.97	5.72	13.42	81.62	0.01	946.
24	19.36	1.55	8.29	7.12	8.06	1.90	0.32	17.40	1.82	0.27	5.03	10.19	17.24	10.47	0.02	1228.
25	20.18	2.87	8.08	18.79	8.17	3.57	0.26	30.78	13.45	0.05	2.53	14.74	30.74	0.10	0.02	1989.
26	19.42	5.25	8.34	49.53	6.43	5.20	0.37	61.53	7.22	0.81	5.25	49.32	62.29	0.72	0.02	4305.
27																
28	19.96	2.72	8.23	17.68	7.13	3.24	0.22	28.28	11.75	0.28	2.71	13.77	28.37	4.17	0.02	1845.
29	19.58	2.49	8.31	16.23	7.59	3.17	0.32	27.29	9.84	0.37	3.57	13.49	27.12	0.32	0.02	1797.
30	18.69	3.63	8.05	18.96	16.66	7.52	0.38	43.52	6.01		6.62	31.98	44.61	0.36	0.02	3029.
31																
32	18.55															
33	18.95	1.29	8.33	6.17	4.81	1.90	0.23	13.22	2.24	0.44	4.96	5.55	13.39	2.78	0.05	939.
35	19.47	1.22	8.44	5.49	5.79	2.15	0.21	13.64	1.93	0.75	6.29	4.36	13.49	2.25	0.08	966.
51	19.32	3.84	8.23	20.30	13.35	4.80	0.38	38.83	20.32	0.21	3.62	15.89	38.89	0.14	0.02	2477.
52	19.32	4.17	8.28	24.89	12.08	4.99	0.38	42.34	23.56	0.09	2.84	16.09	43.08	0.27	0.28	2692.
53		3.88	8.20	23.11	13.39	4.95	0.36	41.64	24.76	0.46	2.45	14.54	41.83	0.11	0.03	2602.
54		2.07	8.28	14.39	5.72	2.86	0.23	21.49	13.33	0.38	3.27	4.92	21.61	0.03	0.03	1360.
55		3.54	7.40	22.30	12.20	4.94	0.36	39.79	24.63		0.97	13.96	39.56	0.18	0.03	2434.
56	19.09	3.74	8.27	18.00	12.28	6.00	0.33	36.60	20.00	0.12	2.69	16.11	36.92	0.21	0.02	2325.
57	19.33	4.44	7.82	24.49	15.13	7.64	0.40	47.29	27.36		1.00	17.37	46.92	0.09	0.01	2889.
58	20.02	2.62	8.14	18.12	5.15	2.82	0.25	26.34	11.57		2.58	11.92	26.52	0.24	0.02	1697.
59	20.02	2.60	7.86	18.31	4.73	2.66	0.25	25.95	11.40		1.85	11.65	26.10	0.05	0.01	1666.
60	19.74	3.00	8.21	16.55	5.49	2.50	0.25	24.74	15.20		3.08	11.33	25.31	3.48	0.02	1649.

TABLE 7. The high and low values and the mean and standard deviation for the electrical conductivity (dsm^{-1}) and chloride concentration (meq/1) for the shallow wells inside and outside and irrigated area of the farm.

		1977		1978		1979		1980		1981	
		EC	Cl	EC	Cl	EC	Cl	EC	Cl	EC	Cl
Wells inside the irrigated area (3 thru 20,23,24,33, 35)	High	3.31	7.70	4.25	9.70	5.79	16.72	5.47	16.69	3.12	9.69
	Low	1.33	2.34	1.22	1.96	.99	1.53	.90	1.37	1.08	1.71
	Mean	2.16	3.76	2.18	4.16	2.40	4.90	2.27	4.72	2.06	3.88
	St.Dev	.71	1.56	.79	2.31	1.08	3.57	1.03	3.52	.71	2.07
		EC	Cl	EC	Cl	EC	Cl	EC	Cl	EC	Cl
Wells outside the irrigated area 25 thru 30)	High	3.82	18.96	5.61	14.77	5.63	12.52	4.99	13.70	5.25	13.45
	Low	3.10	13.77	2.50	2.81	2.71	6.53	2.26	3.09	2.49	6.01
	Mean	3.46	16.37	3.23	9.96	3.45	10.12	3.04	9.26	3.39	9.65
	St.Dev	.51	3.67	1.20	4.15	1.23	2.41	1.11	3.96	1.12	3.08

where Qd and Cd are the volumetric flow rate and concentration of drainage water, and Qw, and Cw are corresponding quantities of irrigation water. The leaching fraction (LF) is defined as

$$LF = Q_d/Q_w = C_w/C_d \quad (5)$$

Equation (5) may be applied to a drainage basin, to an irrigated farm, or to a field soil. When applied to a field, Cd is the concentration of the water below the field. The quality of the shallow groundwater was used for Cd.

The mean monthly values for the electrical conductivity of the river water , the shallow groundwater and the water in drains 1 and 2 are presented in Table 8. The shallow groundwater data are based on the average from the wells 3-11, 14, 15, 17, 19, 20, 23, 24, 33, and 35, which are all located within the irrigated area. Similar data for chloride concentrations is given in Table 9. The data in Tables 8 and 9 were used to compute leaching fractions according to equation 5. Because there is no irrigation during the winter months, data from the winter months were not included in calculating the means for the EC and chloride concentration that were used in equation 5. Only the months April through October were used for these computations. The results of the leaching fraction calculations for the years 1977 through 1981 are presented in Table 10 which shows widely varying leaching fractions. Leaching fractions based on the depths of water applied and estimated consumptive use values are also shown.

The leaching fraction estimates from the water balance and the water quality differ significantly. The water quality estimates are a direct measure of the consumptive use if chloride and total salinity (EC) are assumed nonreactive in the soil zone. Except for 1981, chloride and EC estimates of the leaching fraction are very similar. As chloride is generally assumed conservative, the similarity of the chloride and EC estimates indicates that neither deposition nor dissolution is occurring in the vadose zone.

The water balance derived estimates are based on estimates of consumptive use and applied water. The volume of applied water is measured as outlined above. No direct measure of consumptive use is available so the estimated consumptive use may be in error. Therefore the significant difference between the water balance and water quality derived leaching fraction is due to errors in estimating consumptive use in the water balance approach. Consequently, the water quality derived leaching fractions are deemed more accurate.

The leaching fraction computed for 1981 from EC and Cl may be in error because during part of the irrigation season some wells were inaccessible due to flooded conditions on the fields.

TABLE 8. Mean monthly values of the electrical conductivity (dsm^{-1}) of the irrigation water, of the shallow well water, and of the water in drains 1 and 2.

	Month	Rio Grande 22	Shallow Groundwater	Drain 1	Drain 2
1977	Feb	0.96	3.21	2.73	3.07
	Mar	0.84	2.36	2.95	2.60
	Apr	0.90	2.24	2.90	2.47
	May	1.10	1.99	2.74	2.58
	Jun	1.26	2.08	2.79	2.44
	Jul	1.09	2.00	2.80	2.55
	Aug	1.05	1.99	2.73	2.66
	Sep	0.98	2.18	2.83	2.23
	Oct	0.91	2.21	2.73	2.64
	Nov	1.44	2.47	2.82	2.70
	Dec	1.29	2.31	2.87	2.69
Year Average:		1.07	2.28	2.81	2.60
Apr-Oct Average:		1.04	2.10	2.79	2.51
1978	Jan	1.26	2.14	2.89	2.66
	Feb	1.14	2.08	2.90	2.68
	Mar	1.02	2.06	2.80	2.59
	Apr	0.87	1.88	2.58	2.28
	May	0.71	1.88	2.67	2.50
	Jun	0.54	1.78	2.47	2.30
	Jul	0.76	2.28	2.63	2.51
	Aug	0.85	2.10	2.56	2.27
	Sep	0.94	2.10	2.63	2.51
	Oct	0.92	2.22	2.68	2.39
	Nov	1.07	2.03	2.52	2.39
	Dec	1.17	-	2.54	2.56
Year Average:		0.94	2.05	2.66	2.47
Apr-Oct Average:		0.80	2.03	2.60	2.39
1979	Jan	1.19	2.38	2.65	2.56
	Feb	1.12	2.42	2.71	2.65
	Mar	0.79	3.29	2.65	2.61
	Apr	0.61	2.28	2.64	2.36
	May	0.68	2.06	2.57	2.52
	Jun	0.64	2.31	2.72	2.64
	Jul	0.63	2.16	2.67	2.63
	Aug	0.81	2.09	2.79	2.63
	Sep	0.77	2.31	2.85	2.61
	Oct	0.80	2.38	2.76	2.59
	Nov	0.89	2.20	2.88	2.63
	Dec	1.35	2.44	2.79	2.61
Year Average:		0.86	2.36	2.72	2.58
Apr-Oct Average:		0.70	2.23	2.71	2.56

(Continued)

TABLE 8. (Continued)

	Month	Rio Grande 22	Shallow Groundwater	Drain 1	Drain 2
1980	Jan	1.12	2.38	2.83	2.63
	Feb	2.51	2.54	2.96	2.70
	Mar	0.80	2.46	2.94	2.76
	Apr	0.71	2.34	2.86	2.53
	May	0.63	2.10	2.14	2.24
	June	0.42	1.92	1.86	1.81
	July	0.70	1.95	2.53	2.34
	Aug	0.56	1.97	2.01	1.80
	Sept	0.82	1.65	2.44	2.22
	Oct	0.75	1.91	2.49	1.92
	Nov	0.46	2.00	1.98	2.42
	Dec	1.14	2.04	2.66	2.51
Year Average:		0.80	2.11	2.48	2.32
Apr-Oct Average:		0.66	1.98	2.33	2.12
1981	Jan	1.08	2.06	2.81	2.60
	Feb	1.19	1.80	3.06	2.65
	Mar	0.71	1.28	2.49	2.30
	Apr	0.93	1.19	2.97	2.43
	May	0.66	1.36	2.09	1.80
	June	1.04	1.75	2.90	2.61
	July	1.06	1.68	2.88	2.53
	Aug	1.19	1.61	2.81	2.36
	Sept	0.78	1.60	2.78	2.31
	Oct	1.01	1.50	2.89	2.46
Year Average:		0.97	1.58	2.77	2.41
Apr-Oct Average:		0.95	1.53	2.76	2.36

TABLE 9. Mean monthly values of the chloride concentration (meq/l) of the irrigation water, of the shallow well water, and of the water in drains 1 and 2

	Month	Rio Grande 22	Shallow Groundwater	Drain 1	Drain 2
1977	Feb	2.75	-	12.70	12.61
	Mar	1.53	3.76	13.61	10.89
	Apr	1.67	3.53	13.24	9.89
	May	2.21	3.22	12.50	10.12
	Jun	2.81	3.29	12.21	9.38
	Jul	1.67	3.57	12.15	10.25
	Aug	1.44	3.36	11.32	10.84
	Sep	1.52	3.61	11.40	7.83
	Oct	1.49	3.66	11.51	10.65
	Nov	4.08	4.11	12.29	11.07
	Dec	3.56	3.86	12.59	11.29
Year Average		2.25	3.60	12.32	10.44
Apr-Oct Average		1.83	3.46	12.05	9.85
1978	Jan	3.48	3.72	12.61	10.73
	Feb	3.00	3.71	12.60	11.09
	Mar	1.53	3.67	12.37	10.41
	Apr	1.56	3.57	11.21	8.42
	May	1.21	3.27	10.47	9.19
	Jun	1.00	2.48	9.72	8.21
	Jul	1.18	3.45	10.28	9.03
	Aug	1.25	3.54	10.81	8.14
	Sep	1.57	3.70	10.65	9.64
	Oct	1.58	3.88	11.22	9.44
	Nov	2.73	3.96	9.78	9.47
	Dec	3.22	-	10.19	9.58
Year Average		1.94	3.54	10.99	9.44
Apr-Oct Average		1.34	3.41	10.62	8.87
1979	Jan	3.17	4.56	10.28	9.25
	Feb	2.66	4.55	10.63	9.99
	Mar	1.45	4.51	10.53	9.71
	Apr	1.42	4.45	10.55	9.20
	May	1.35	4.28	10.29	9.05
	Jun	1.02	4.04	11.07	9.94
	Jul	1.22	3.75	10.37	8.92
	Aug	1.25	3.41	12.12	10.25
	Sep	1.03	4.57	12.55	9.69
	Oct	1.05	4.50	12.57	11.63
	Nov	2.07	4.39	13.14	9.80
	Dec	4.48	5.23	12.94	10.53
Year Average:		1.85	4.35	11.42	9.83
Apr-Oct Average:		1.19	4.14	11.36	9.81

(Continued)

TABLE 9. (Continued)

1980	Jan	3.04	4.20	12.41	10.91
	Feb	4.77	4.23	14.35	9.61
	Mar	1.76	5.03	13.71	11.61
	Apr	1.41	4.86	13.57	10.08
	May	1.53	4.17	9.85	8.73
	Jun	1.33	3.92	8.77	7.63
	Jul	1.31	3.56	10.88	8.75
	Aug	0.91	3.77	8.51	7.22
	Sept	1.72	2.92	12.28	9.16
	Oct	1.27	3.39	10.21	6.86
	Nov	0.98	3.33	7.92	9.15
	Dec	3.09	3.40	11.46	9.37
Year Average:		1.93	3.90	11.16	9.09
Apr-Oct Average:		1.35	3.80	10.58	8.35
1981	Jan	2.60	3.48	12.18	9.76
	Feb	2.86	3.51	11.69	8.54
	Mar	1.32	1.88	9.70	13.30
	Apr	1.63	1.81	12.26	13.80
	May	1.27	1.97	8.88	7.01
	Jun	2.12	2.40	11.99	10.09
	Jul	1.64	2.76	12.28	9.51
	Aug	2.28	3.12	11.30	9.12
	Sept	2.00	3.11	13.90	9.41
	Oct	1.80	2.71	11.77	8.74
Year Average:		1.95	2.68	11.59	9.93
Apr-Oct Average		1.82	2.55	11.75	9.67

TABLE 10. Leaching fractions (LF) and irrigation efficiencies (IE) based on mean electrical conductivity and chloride concentrations (Apr.-Oct.).

Year	Irrigation Water	Shallow Groundwater	Leaching Fraction LF	Irrigation Efficiency IE
		Electrical Conductivity (dsm^{-1})		
1977	1.04	2.10	0.50	0.50
1978	0.80	2.03	0.39	0.61
1979	0.70	2.23	0.31	0.69
1980	0.66	1.98	0.33	0.67
1981	0.95	1.53	0.62	0.38
		Chloride (meq/1)		
1977	1.83	3.46	0.53	0.47
1978	1.34	3.41	0.39	0.61
1979	1.19	4.14	0.29	0.71
1980	1.35	3.80	0.36	0.64
1981	1.82	2.55	0.71	0.29

SUMMARY OF IRRIGATION EFFICIENCY ESTIMATES

Year	Water Balance	EC	Cl
1977		.50	.47
1978	.52	.61	.61
1979	.42	.69	.71
1980	.53	.67	.64
1981	.45	.38	.29

Statistical Tests of Water Quality Changes--

In an effort to quantitatively determine if any long term trends exist in the salinity of the shallow groundwater, a paired mean difference test was performed for chloride concentration and total dissolved solids. Two sets of comparisons were done, one in January and one in July. The calculations are performed using the difference (D) in quality at the shallow wells for paired observations in time. For example, the value of D for a well when comparing January 1978 and January 1979 is the measured concentration in 1979 minus that of 1978. The difference is calculated for each well with measurements in both years. If a measurement is not available for one year or the other for a

particular well, that well is excluded from the analysis. A standard t-test is then applied to determine if the mean difference is significantly different from zero.

The results of the analyses are presented in Table 11. No comparison was made to July, 1981 because so few wells were sampled due to excessive irrigation.

In general, no significant trend was observed in quality over the length of the project even though some year to year changes in salinity were statistically significant.

Nutrients

The mean annual concentrations of nitrate (NO_3) and ortho phosphate (PO_4) in the irrigation and drainage water and in the shallow wells are summarized in Table 6 for 1977 through 1981. Large variations in nutrient levels of the groundwater exist over the farm. For the irrigated area (wells 3-11, 14, 15, 17, 19, 20, 23, 24, 33 and 35), the highest and the lowest values as well as the mean and standard deviation of the mean are given in Table 12. Note that for the nutrient data the standard deviation of the mean is generally as large or larger than the mean whereas for electical conductivity and chloride the coefficient of variation is always less than one (Table 7).

Mean Annual Concentrations--

In order to make year to year comparisons of the nitrate and phosphate concentrations of the irrigation and drainage water, annual means were computed for the irrigation water and for the water in drains 1 and 2. The mean values are presented in Table 13; also included are the mean values for the shallow wells as given in Table 12.

In 1978 the NO_3 concentration of the shallow groundwater was of the same magnitude as that of the irrigation water (Table 13), while the drainage water contained much less NO_3 than the irrigation water. Inasmuch as the volume of drainwater is about half the volume of irrigation water, the mass of NO_3 emitted from the farm and adjacent area, as measured at station 2, was less than 5% of that added to the farm with irrigation water. In 1979 the NO_3 in the shallow wells and in the drains increased considerably over that in 1978, although the total mass passing through station 2 was still less than 10% of that applied in the irrigation water. The increase in nitrate concentration of the shallow wells and drains was probably associated with areas of alfalfa converted to corn. In 1978 there were 23.8 ha in corn, and in 1979, 54.9 ha, a 2.3 fold increase. Nitrogen, accumulated in the roots of alfalfa in organic form, may break down to NO_3 and leach into the groundwater after corn has been planted. The amounts of nitrogen accumulated in alfalfa roots can be considerable, and possibly contributed to the increase in nitrate

TABLE 11

Statistical tests of the significance of changes of shallow groundwater quality.

YEARS	No. of Pairs	Mean	Standard Deviation		
Chloride(meq/l)	n	$\bar{D}$**	S_D	t	95%t
Jan.78-79	18	-0.72	1.31	-2.33*	2.11
79-80	17	-0.40	1.74	-0.95	2.12
80-81	16	-0.62	2.83	-0.88	2.13
78-80	17	0.38	2.12	0.74	2.12
78-81	17	-0.20	1.85	-0.45	2.12
79-81	17	-0.93	2.26	-1.70	2.12
July77-78	12	0.39	1.61	0.84	2.20
78-79	17	-0.04	1.46	-0.11	2.12
79-80	17	1.12	2.80	1.65	2.12
77-79	11	0.11	1.48	0.25	2.23
77-80	12	1.53	3.34	1.59	2.20
78-80	18	1.03	2.91	1.50	2.11
Total Dissolved Solid(mg/l)					
Jan.78-79	18	324	388	3.54*	2.11
79-80	17	119	431	1.14	2.12
80-81	16	-348	503	-2.77*	2.13
78-80	17	-465	544	3.52*	2.12
78-81	17	121	349	1.43	2.12
79-81	17	-208	431	-1.99	2.12
July77-78	11	303	655	1.53	2.23
78-79	17	26	448	.24	2.12
79-80	17	304	686	1.83	2.12
77-79	10	283	402	2.23	2.26
77-80	11	677	932	2.41*	2.23
78-80	18	170	817	.88	2.11

$t = \bar{D}\sqrt{n}/S_D$

*significant at the 95% level

**Positive values of $\bar{D}$ indicate an increase from one year to the next.

TABLE 12

The high and low values, the mean and standard deviation of the mean monthly nitrate (NO_3-mg/1) and phosphate (PO_4-mg/1) for shallow wells 3-11, 13, 14, 15, 17, 18, 19, 20, 23, 24, 33, and 35.

	1977		1978		1979		1980		1981	
	NO_3	PO_4	NO_3	PO_4	NO_3	PO_4	NO_3	PO_4	NO_3	PO_4
High	27.50	.15	7.27	.09	78.68	.41	76.31	.21	81.62	.35
Low	.01	.01	.05	.01	.14	.04	.11	.01	.01	.01
Mean	4.61	.05	1.56	.02	7.31	.14	7.88	.03	11.14	.04
St. Dev	7.07	.04	1.89	.02	18.12	.08	17.40	.04	21.58	.08

TABLE 13. Mean annual concentration of nitrate (NO_3-mg/l) and phosphate in the irrigation and drainage water and in the shallow wells.

NO_3-mg/l	IRRIGATION WATER	SHALLOW WELLS	DRAIN 1	DRAIN 2
1977	1.49	4.61	1.46	1.46
1978	3.82	1.56	0.47	0.15
1979	0.96	7.31	0.99	0.19
1980	0.86	7.88	1.45	0.18
1981	1.21	11.14	2.63	1.90
PO_4-mg/l				
1977	0.24	0.05	0.02	0.02
1978	0.17	0.02	0.03	0.06
1979	0.17	0.14	0.16	0.08
1980	0.11	0.03	0.03	0.02

in the groundwater and the drains.

Another reason for the increase in nitrogen in the water of the shallow wells and drains is the greater use of nitrogen fertilizer on corn. Alfalfa was fertilized with phosphorus, but corn with nitrogen and phosphorus. The nitrogen fertilizer was applied in the form of ammonium sulphate [$(NH)_4 SO_4$] and anhydrous ammonia which is readily oxidized to NO_3 in the unsaturated zone of the soil at the farm. Fertilizer application rates are shown in Table 14. Five fold increases in the NO_3 concentration of the ground water were measured for wells 11 and 23. These wells are located in an area converted to corn in 1979. The soils in this area are rather permeable, and nitrates could leach readily in such soils. However, the NO_3 concentration in well 24, which is located in this same general area (planted to corn), decreased between 1978 and 1979, and then increased in 1980 and 1981 (Table 6).

A comparison was made between the average NO_3 and PO_4 concentrations of wells 3,4, 11, 23, and 24 (planted to corn) and the average concentrations of these nutrients in wells 5, 6, 7, 8, 9, 14 and 15 (in alfalfa). The results are shown in Table 15.

The comparison in Table 15 shows that even though the NO_3 levels in the shallow groundwater in the area that remained in alfalfa decreased slightly the NO_3 levels in the area converted to corn increased seven-fold. Thus the change from alfalfa to corn seems to have had an effect on the NO_3 concentration of the shallow groundwater at the farm.

TABLE 14. Fertilizer types (N-P-K) and application rates (lbs/acre) on Herkenhoff farm

	Acreage (ac)	P_2O_5 0-46-0	NH_4 SO_4 20-0-0	Anhydrous Ammonia 45-0-0	Urea 45-0-0
			Alfalfa		
1974	-	250	-	-	-
1975	-	200	-	-	-
1976	-	250	-	-	-
1977	222	250	-	-	-
1978	185	250	-	-	-
1979	108	200	-	-	-
			Corn		
1974	-	200	-	150	-
1975	-	200	-	200	-
1976	-	250	-	250	-
1977	22	250	-	90	600
1978	59	250	-	80	500
1979	136	200	300	65	-

TABLE 15. Average water quality of wells 3, 4, 11, 23, and 24 (corn area: converted from alfalfa to corn in 1979) versus average quality of wells 5, 6, 7, 8, 9, 14, 15 (alfalfa area)

	NO_3 (mg/l)			PO_4 (mg/l)		
	1978	1979	Increase	1978	1979	Increase
Corn area	3.54	24.80	7.0x	0.022	.094	4.3x
Alfalfa area	0.80	0.74	0.93x	0.029	.19	6.6x

The levels of PO_4 in the irrigation water remained the same in 1978 and 1979 (see Table 13). However, in both years the phosphorus levels in drain 2 were much lower than in the irrigation water. In 1978 the concentration in drain 2 was about 35% of that in the irrigation water. In 1979 the latter value increased to 47%. Taking into account that the volume of drainage water is about half the volume of the irrigation water applied, it appears that the load of PO_4 is considerably reduced by the irrigation process. However, since the time required for the PO_4 to travel through the soil of the farm into the drains is considerable (the average residence time of a noninteracting solute may be from 2-5 years) measurements need to be made over at least a five year period to definitely relate changes in fertilizer practices, cropping patterns and irrigation management to changes in PO_4 levels in irrigation return flow.

The increase in phosphorus in 1979 in the shallow groundwater and in the two drains is rather large. There was a 1.5x increase for drain 2 (see Table 13), a 5 fold increase for drain 1, and a 7 fold increase for the shallow groundwater. This increase in phosphorus is probably also related to the change in cropping pattern.

Table 15 shows the increase in PO_4 in the shallow groundwater for the areas that remained in alfalfa, and the area converted to corn. While in the alfalfa area the phosphorus level in the groundwater increased 6.6 times between 1978 and 1979, the increase in the area converted to corn was 4.3 fold. Thus, in both the alfalfa area and the corn area, the PO_4 level in the shallow groundwater increased significantly. It is not clear why the groundwater of the area in alfalfa had a 6.6 times higher phosphorus level in 1979, as compared with that in 1978.

Nutrient Concentration Changes Versus Time--

Monthly changes in the nitrate nitrogen concentration of the irrigation water, of the shallow groundwater, and of the water in drains 1 and 2 are presented in Figure 12. These figures represent water samples analyzed by the Soil and Water Testing Laboratory at New Mexico State.

Figure 12a shows only one large fluctuation in the NO_3 content of the irrigation water. This may have resulted from variations in river flow at San Acacia, and the use of drain flow. The irrigation water used at the farm is a mixture of water from the Unit 7 drain, and the Rio Grande River. The Unit 7 drain runs parallel to the Rio Grande, and drains the west-side of the middle Rio Grande basin between San Acacia and Albuquerque. Water from the Unit 7 drain makes up between 20 to 40% of the water diverted at San Acacia. Because the NO_3 concentration of the Unit 7 drain (not measured) may be higher or lower than of the river water, different ratios of Unit 7 drain water to river water would result in different quality irrigation water for the farm.

Figure 12b shows the monthly variation in NO_3 concentration of the shallow wells. The average concentration of the shallow wells was obtained by averaging the data from wells no. 3, 4, 5, 6, 7, 8, 9, 10, 11, 14, 15, 17, 19, 20, 23, 24, 33, and 35.

Early in the 1977 irrigation season there was a significant increase and subsequent decrease in the NO_3 concentration of the shallow wells. The NO_3 concentration decreased slowly in 1978, while in 1979 the NO_3 levels increased throughout the growing season. This same general pattern, except for the peak value in 1977 was observed for drain 1 (Figure 12c), but not for drain 2 (Figure 12d). In 1980 and 1981 the nitrate concentrations were high during the irrigation season and low during the winter. The increases in NO_3 concentration during 1979 for the shallow wells

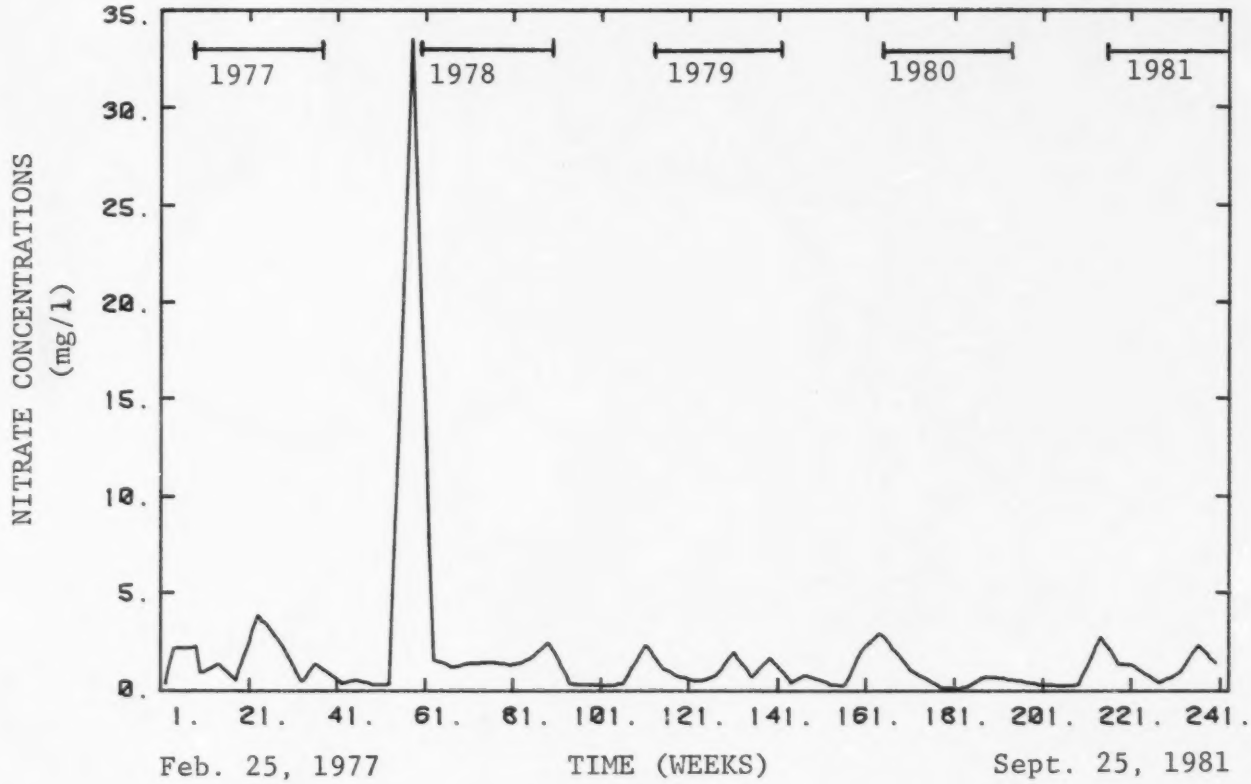

Figure 12a. Monthly nitrate concentration in the river; the irrigation season is indicated for each year.

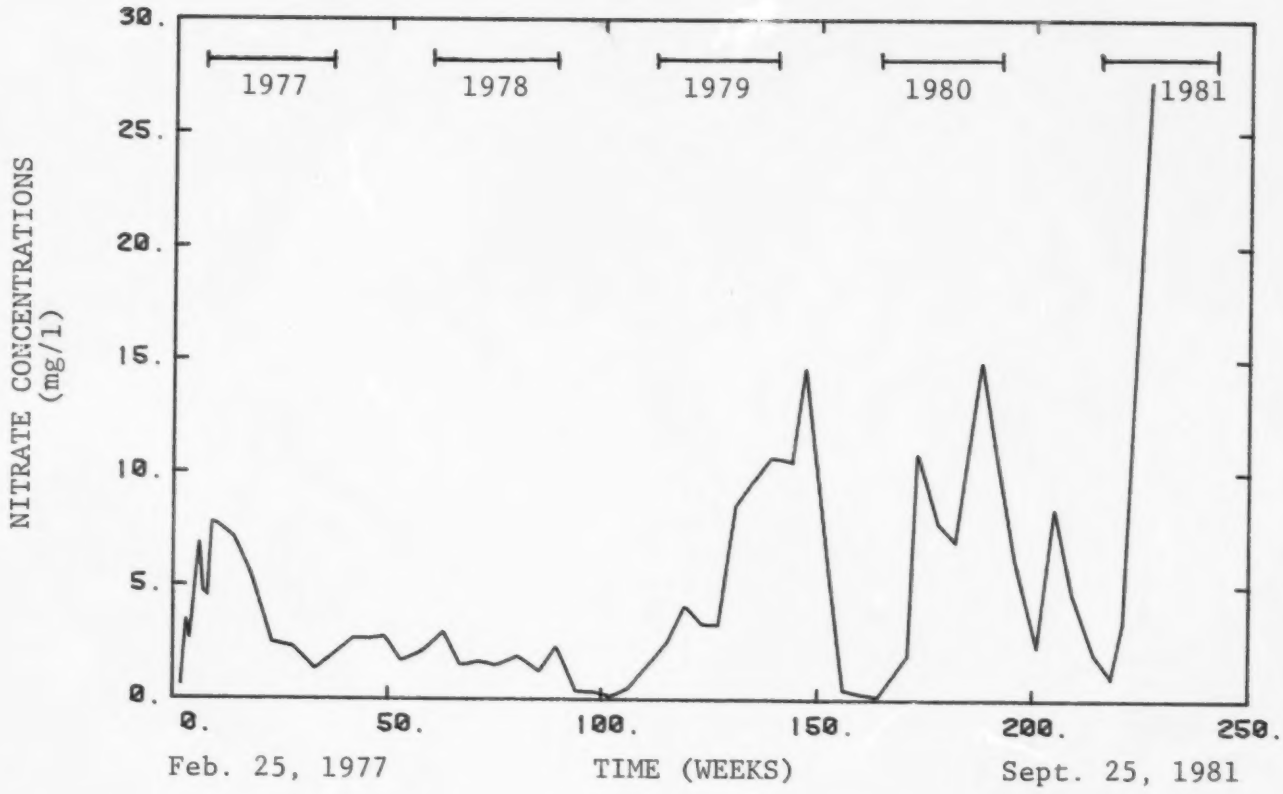

Figure 12b. Monthly nitrate concentrations in the shallow groundwater; the irrigation seasons are indicated.

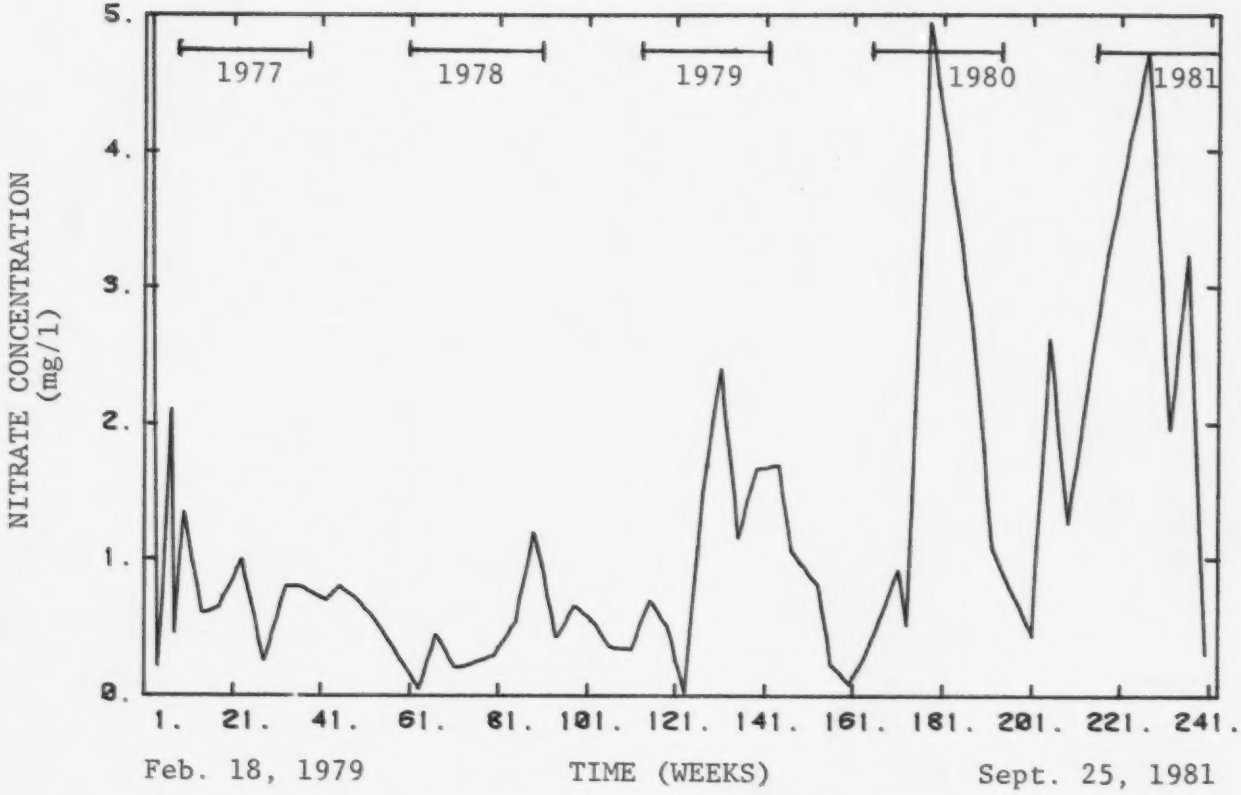

Figure 12c. Monthly nitrate concentrations in drain 1; the irrigation seasons are indicated.

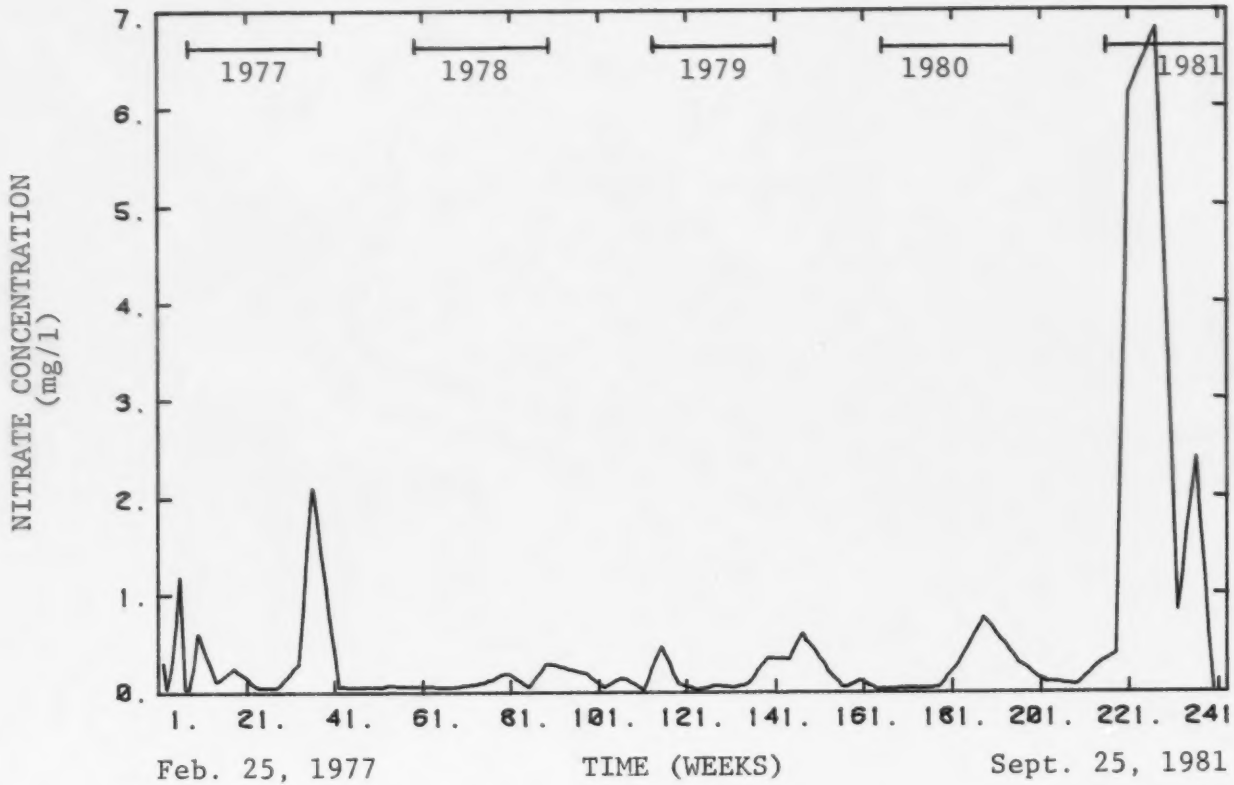

Figure 12d. Monthly nitrate concentrations in drain 2; the irrigation seasons are indicated.

and for drain 1 are consistent with the data presented earlier, and are probably related to the changes in cropping patterns. The trend for increasing nitrate concentration is consistent with the continuing increases in the area planted in corn.

In contrast to the nitrate behavior, there is considerable variation in the concentration of PO_4 in the irrigation water (Figure 13a). Until the spring of 1979 there was relatively little variation in the levels of PO_4 in the shallow wells (Figure 13b) and in drain 1 (Figure 13c). However, in the spring of 1979 there were sudden increases in PO_4 in the shallow wells and in drain 1, possibly as a result of the application of phosphorus fertilizer on corn in early 1979. Several PO_4 peaks were observed in the drain 2 samples.

It is possible to correlate some of the drain 2 PO_4 peaks to either irrigation, or precipitation caused runoff events. Such events, however, were rare on the San Acacia site.

Distribution Along Two Transects--

The variation in NO_3-N for shallow groundwater samples collected at 7.62 m (25 ft.) intervals along the north-south transect (see Figure 5) is shown in Figure 14a while the variation in NO_3-N concentration of the shallow groundwater is shown in Figure 14b. This variability is probably related to past cropping patterns and fertilizer practices and to the variation in soil properties. Also plotted in Figure 14 are the permeability of the surface soil as estimated from a soil survey of the farm (Duffy, Wierenga and Kselik, 1981). Although there seems to be some correlation between surface permeability and the NO_3-N concentration of the shallow groundwater along the north-south transect, this is not evident along the east-west transect. Except for one peak value of about 4.5 mg/l, the NH_4-N levels along the east-west transect in the shallow groundwater are relatively low (Figure 15).

Surface Runoff--

The volume and quality of surface runoff entering the middle drain (drain 2) were measured during two irrigations in 1978 and during one irrigation in 1979. Because of the irregular irrigation schedule used at the farm, and the differences in depth of water applied from one irrigation to another, it was difficult to obtain a representative estimate of the volume of tail water which did run off the ends of the fields directly into the drain. Portable Parshall flumes were used to measure the volume of water running into the drains.

Figure 16 is a plot of PO_4-P, NH_4-N, NO_3-N and the discharge at station 2 measured during the first irrigation in 1978. The discharge is separated into direct runoff from the fields (tail water) and subsurface drainage. The sharp increase in nutrients on April 4 appears to be the result of increases in tail water

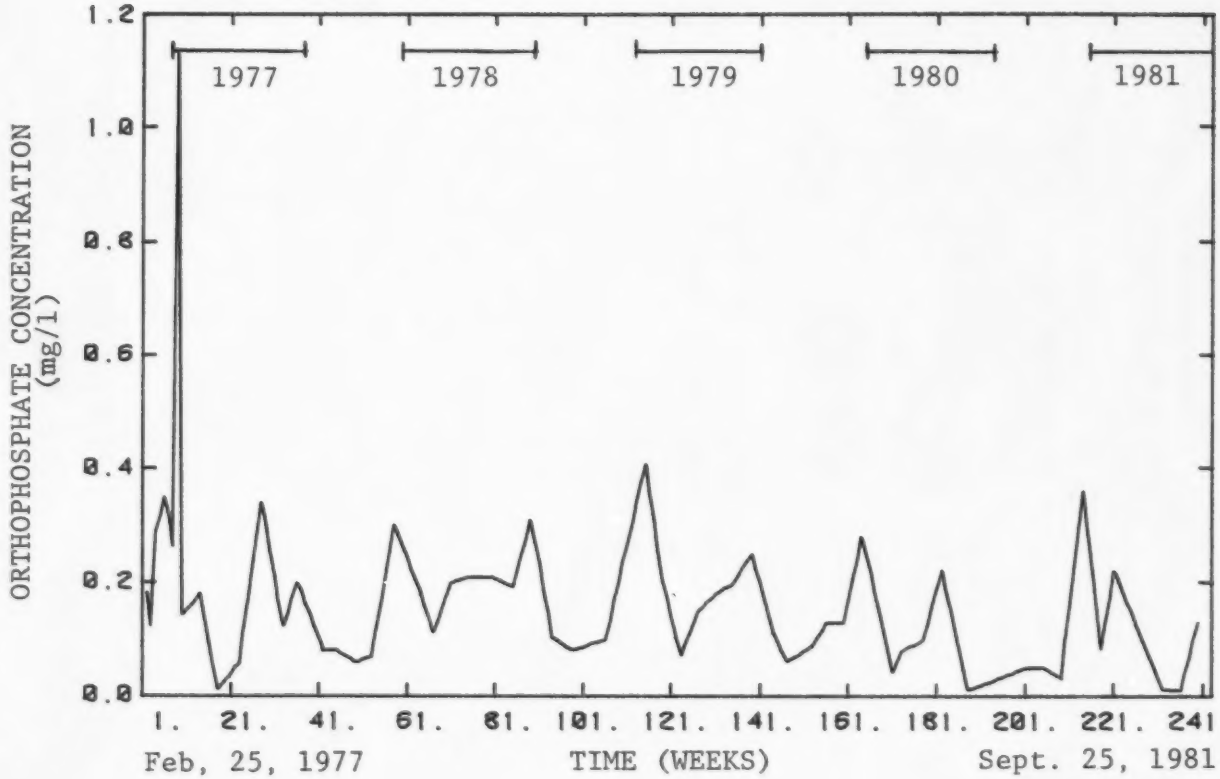

Figure 13a. Monthly orthophosphate concentration in the river; the irrigation seasons are indicated.

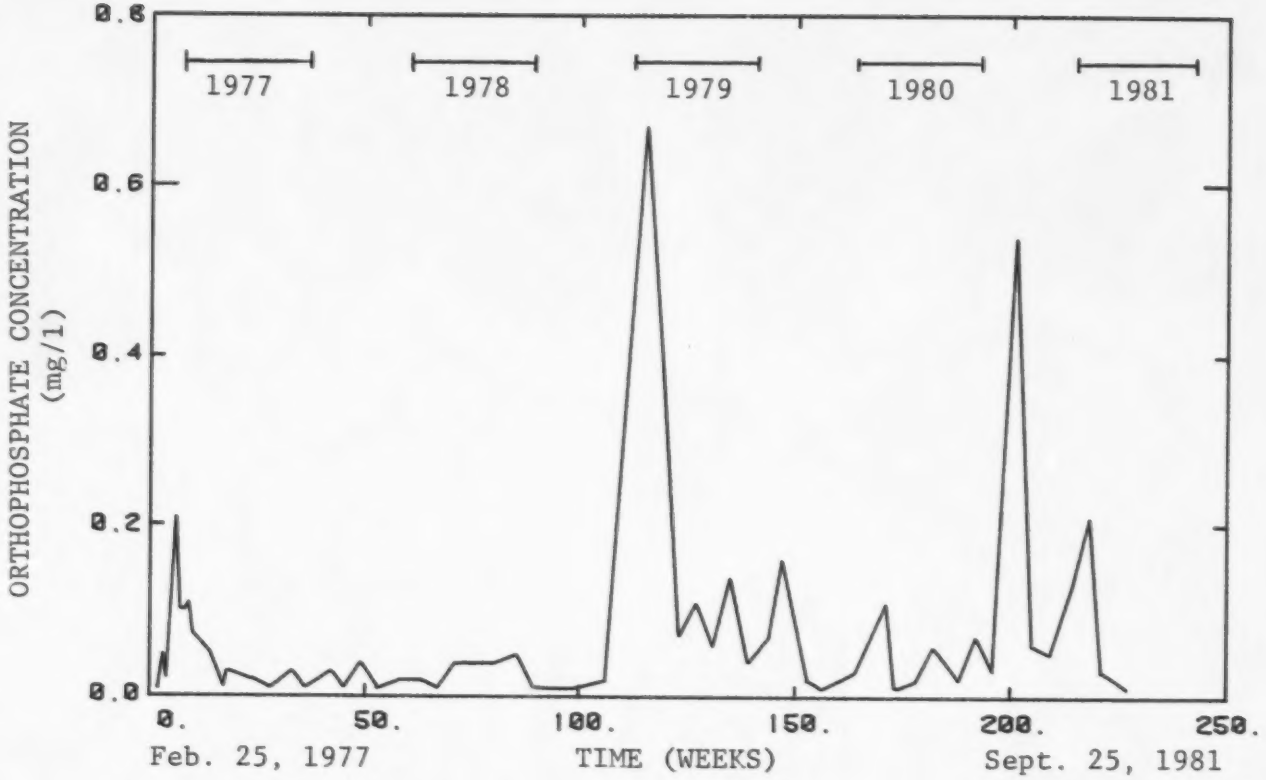

Figure 13b. Monthly orthophosphate concentration in the shallow groundwater; the irrigation seasons are indicated.

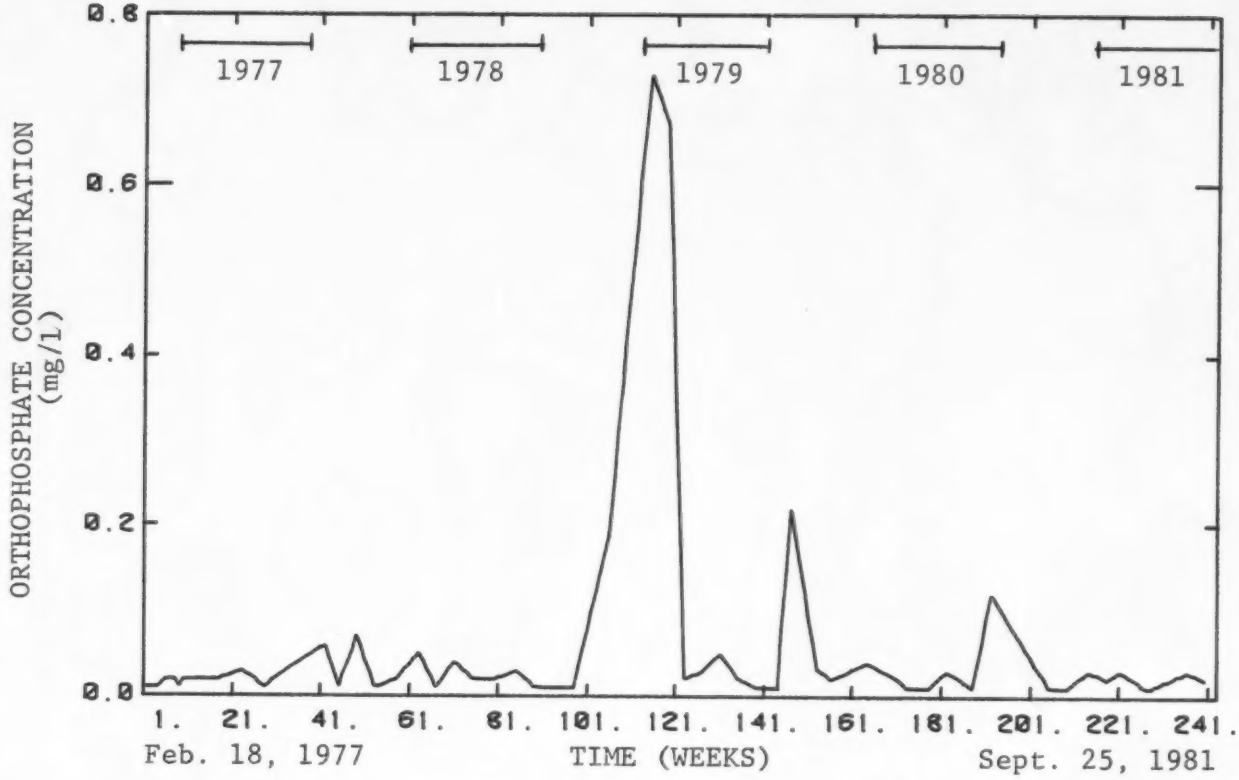

Figure 13c. Monthly orthophosphate concentration in drain 1; the irrigation seasons are indicated.

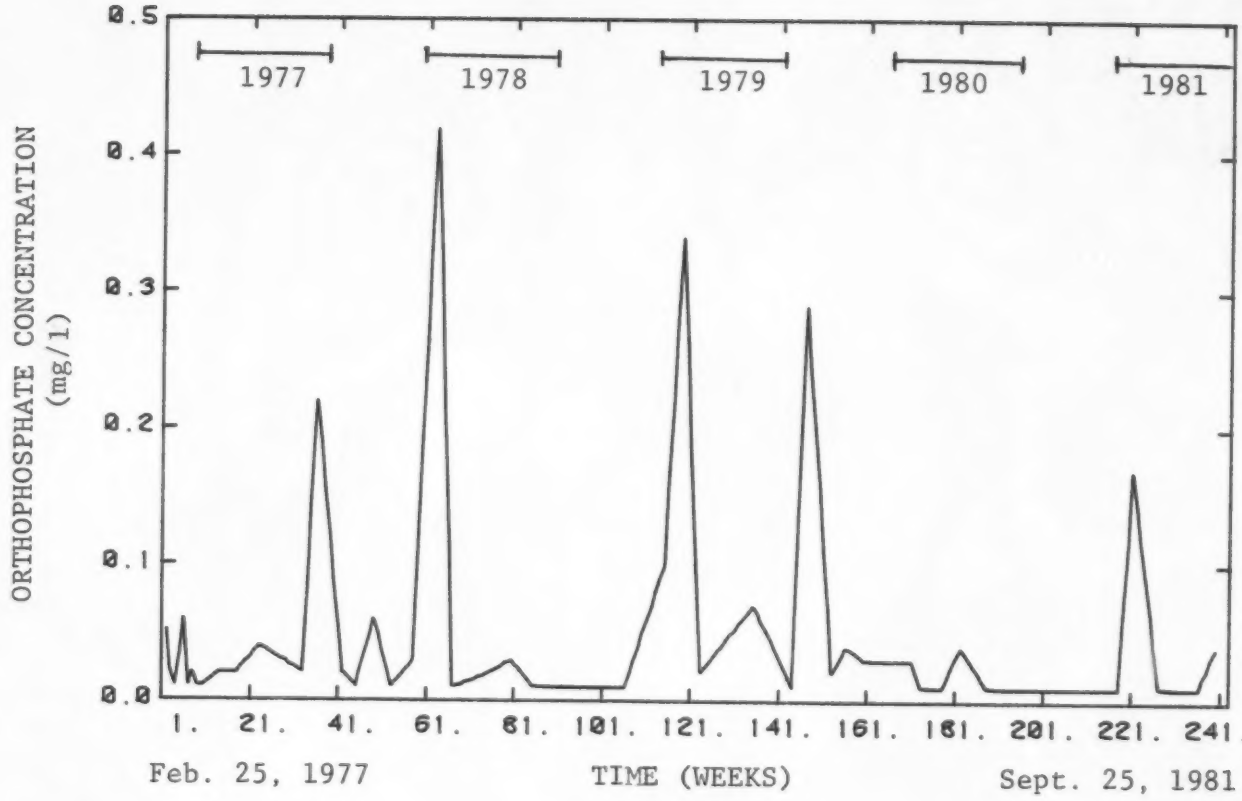

Figure 13d. Monthly orthophosphate concentration in drain 2; the irrigation seasons are indicated.

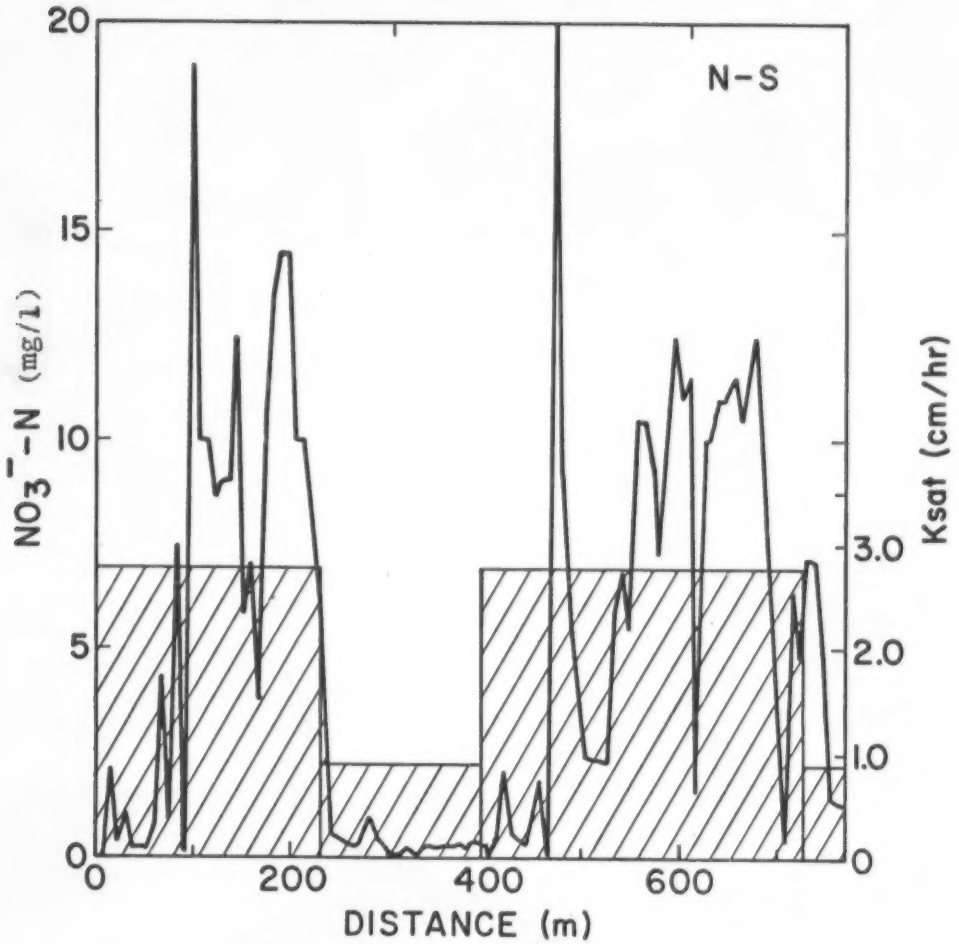

Figure 14a. Variation in NO_3-N concentration in the groundwater (solid curve) and the hydraulic conductivity of the surface soil (crosshatched area) along the north-south transect (See Figure 5). Samples were taken at 25 foot intervals during January 1978.

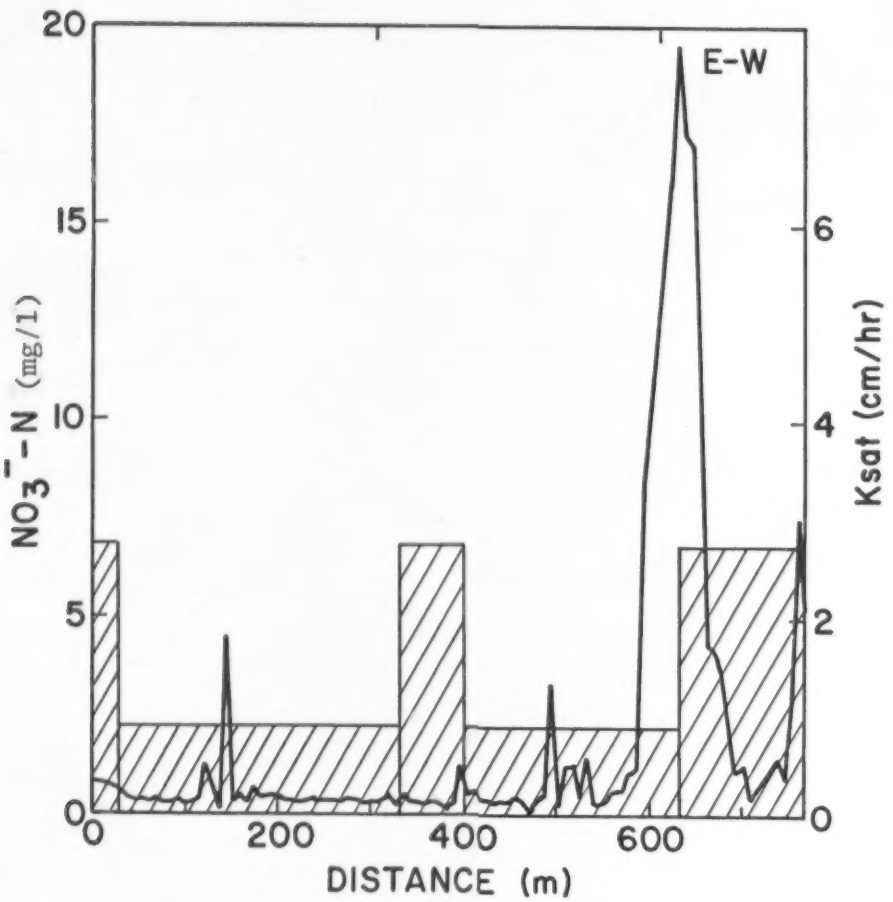

Figure 14b. Variation in NO_3-N concentration in the groundwater (solid curve) and the hydraulic conductivity of the surface soil (crosshatched area) along the east-west transect (See Figure 5). Samples were taken at 25 foot intervals during April 1979.

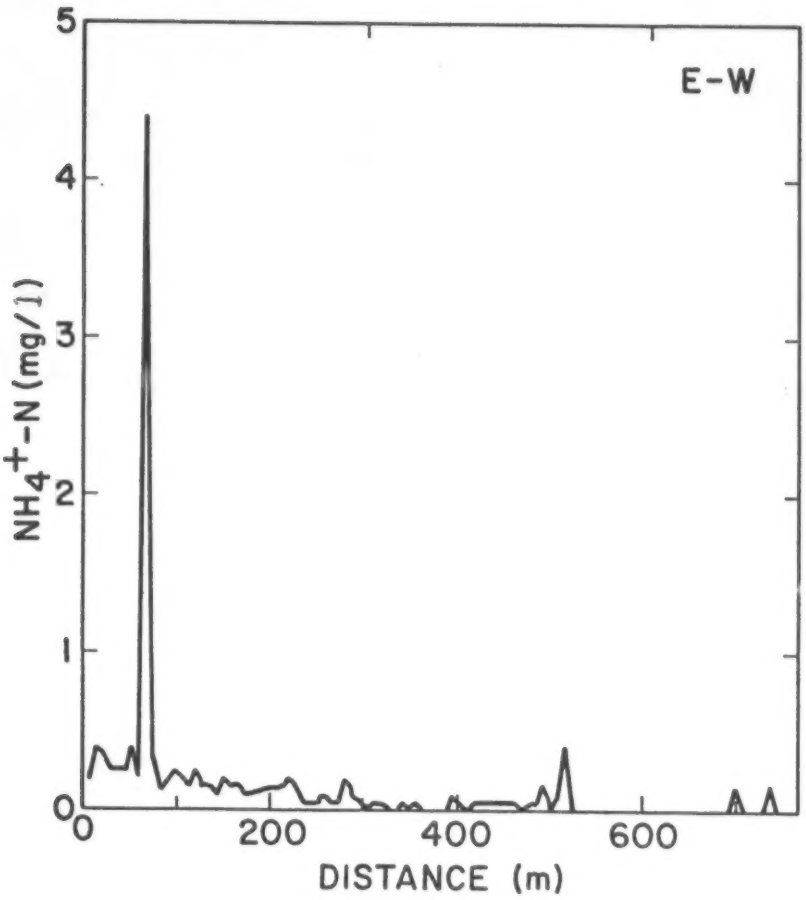

Figure 15. Variation in the NH_4-N concentration in the groundwater along the east-west transect (See Figure 5). Samples were taken at 25 foot intervals during April 1979.

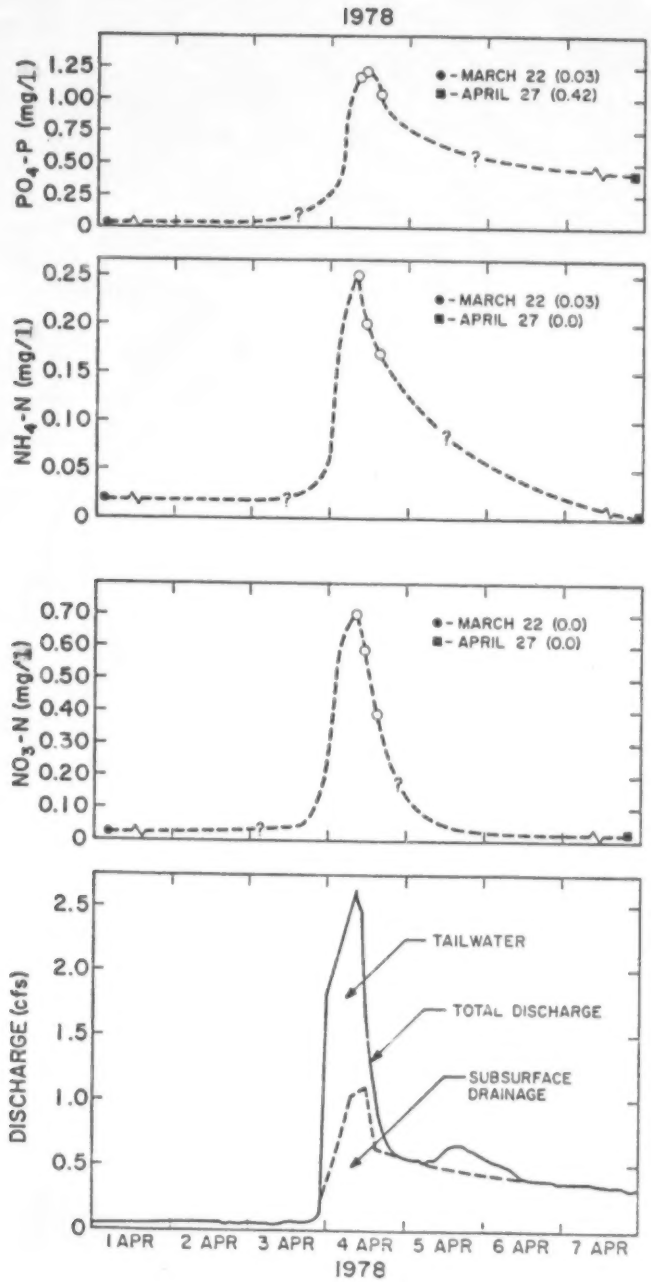

Figure 16. Nutrient concentrations and discharge at station 2 during the first irrigation in 1978.

and subsurface drain flow. Tail water may contain dissolved fertilizer, applied earlier to corn or alfalfa. However, no independent measurements of the nutrient concentrations in the surface runoff were taken.

Figure 17 is a plot of PO_4-P, NO_3-N and drain discharge for the second irrigation in 1978. The increase in drainflow is more gradual during this second irrigation, because fields on both sides of the drain were irrigated on different dates. There was an increase in PO_4-P on April 25, but not in NO_3-N. On April 27 there was a sharp increase in drain flow, much of it coming from tail water, and also associated with increases in PO_4-P and NO_3-N. The data in Figures 16 and 17 show that tail water run-off can cause a temporary increase in nutrient levels in the drainwater.

Figure 18 shows drain discharge, and NO_3-N and NH_4-N levels in the drainwater (station 2) during the fourth irrigation in 1979. This time the increases in nutrient levels took place after the peak in tailwater flow, indicating that much of these increases were from subsurface flow. This behavior seems to correspond with the data in Figure 12 which showed significant increased levels of NO_3-N and NH_4-N in the shallow groundwater.

Statistical Tests of Nitrate Changes--

The standard t-test was also applied to test the significance of nitrate concentration changes in the shallow groundwater. The results of paired samples for January or July of the indicated years are shown in Table 16. The changes are indicated to be significant at the 95% level in only one case (the decreases from 1978 to 1979) even though there are rather large increases in the mean for some pairs. Because of the high degree of variability of nitrate data (large S) these large increases in the mean are not indicated to be significant. Of course the routine application of this simple test is questionable because there are two recognizable distinct populations (areas converted to corn and areas remaining in alfalfa).

The data presented in Figure 12 and Table 15 leave little doubt that the conversion to corn resulted in significant increases of nitrate levels in the shallow groundwater and the drains.

Deep Wells and Stratigraphy--

Well logs were prepared following the drilling of each of the deep wells at the site. Two deep wells at the weather station (DW100) and (DW65) were drilled by the New Mexico Bureau of Mines and Mineral Resources using a rotary drilling rig. All other wells were drilled using a truck mounted auger drilling rig with 0.10 m (4 in.) diameter auger. The locations of the deep wells are shown in Figure 1 and are labeled by NW, DW, or EW and

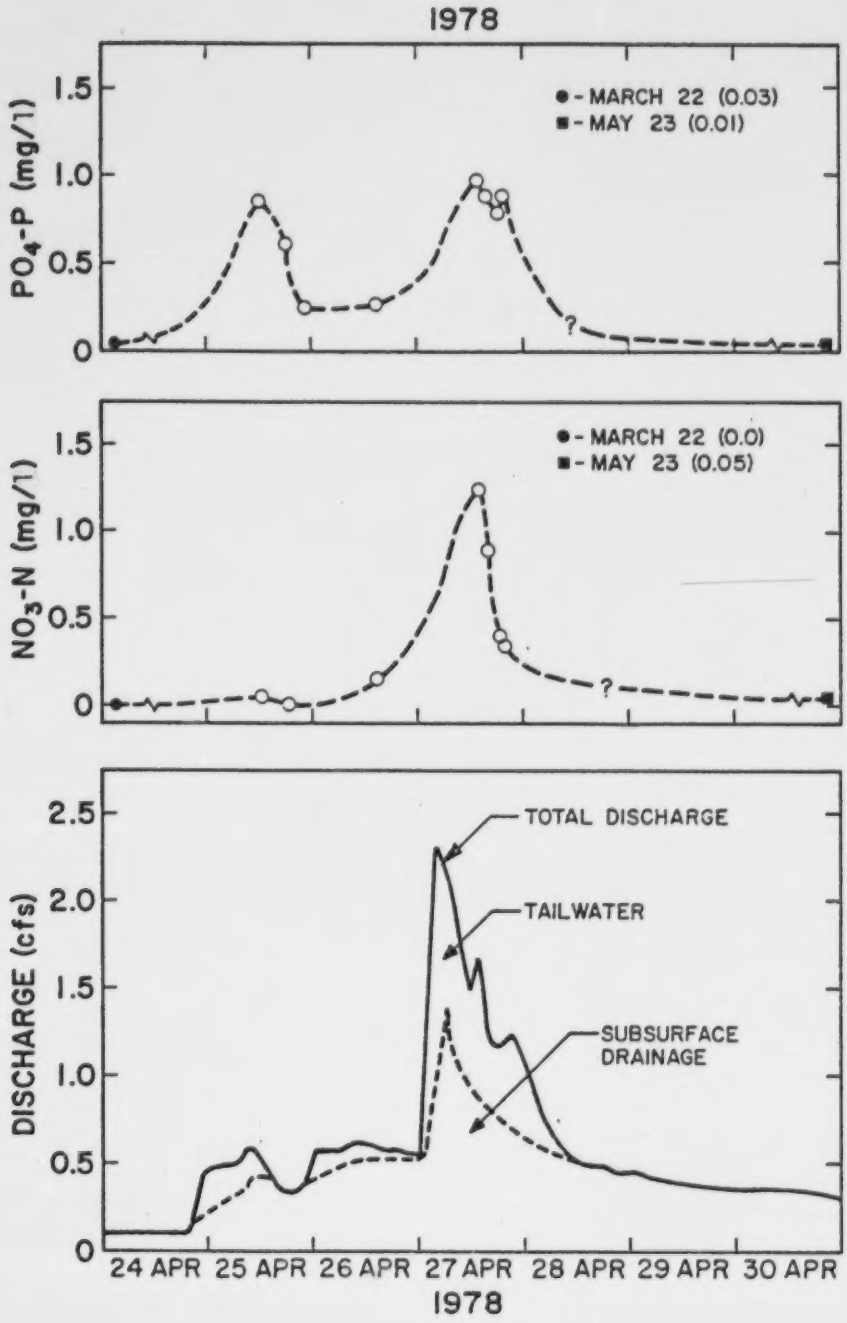

Figure 17. Nutrient concentrations and discharge at station 2 during the second irrigation in 1978.

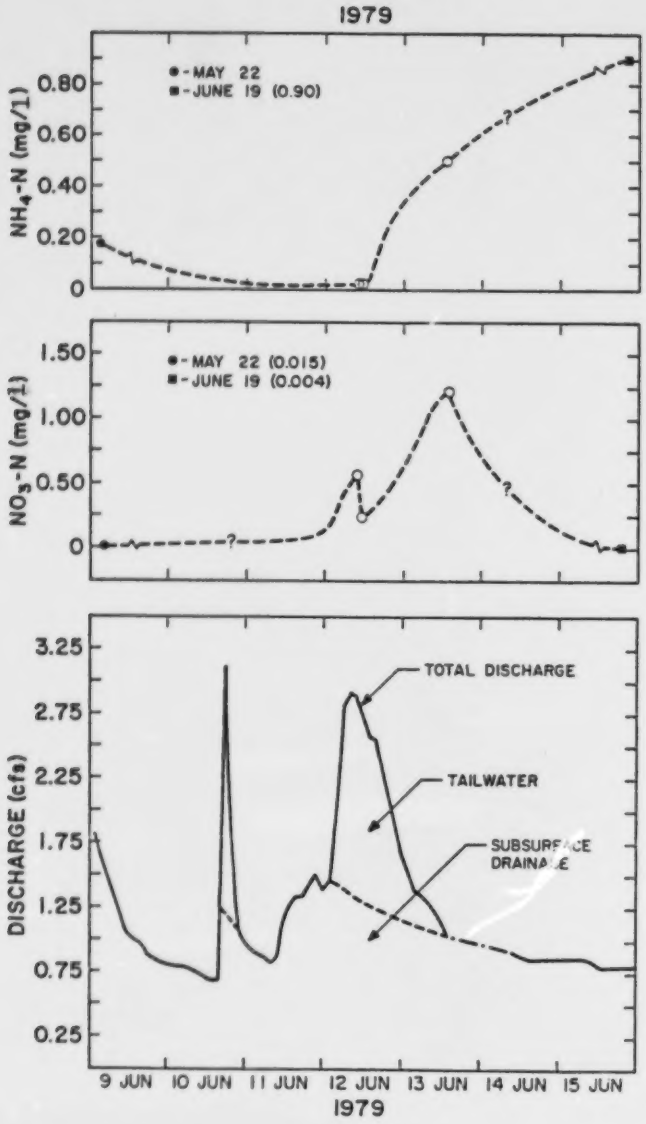

Figure 18. Nutrient concentrations and discharge in the middle drain at station 2 during the fourth irrigation in 1979.

TABLE 16. Statistical comparison of groundwater nitrate concentration (mg/l) considering dependent paired samples.

January YEARS	No. of Pairs n	Mean $\bar{D}$	Standard Deviation S_D	t	95%t
78-79	14	-2.42	3.94	-2.30*	2.16
79-80	17	4.86	12.97	1.54	2.12
80-81	14	2.38	9.22	0.97	2.16
78-80	13	4.45	13.83	1.16	2.18
78-81	11	8.76	24.54	1.18	2.23
79-81	15	8.13	22.34	1.41	2.15
July					
77-78	11	-0.49	2.81	-0.58	2.23
78-79	17	1.85	7.68	0.99	2.12
79-80	17	4.68	9.81	1.97	2.12
77-79	10	-4.20	10.80	-1.23	2.26
77-80	11	8.09	19.05	1.41	2.23
78-80	18	6.20	15.18	1.73	2.11

$$t = \bar{D}\sqrt{n}/S_D$$

*significant at the 95% level

a number which is the depth of the well in feet. Borehole S3 was drilled to approximately 27 m (90 ft) and provides stratigraphic control on the south side of the site. The wells designated, DW54, DW100, DW63, NW73 and borehole S3 are spaced at intervals of around 300 meters along a roughly north-south section through the site (See Figure 19) and well EW74 is 800 meters east of this section. The well logs along the north-south section generally show a thick dense clay at depths ranging from 6 to 12 m. Although the continuity of this clay layer is not certain especially to the south (borehole S3), this layer is thought to act hydrologically as an aquitard.

The water quality of the deep wells will be discussed in the Section 5 on the Groundwater Flow System.

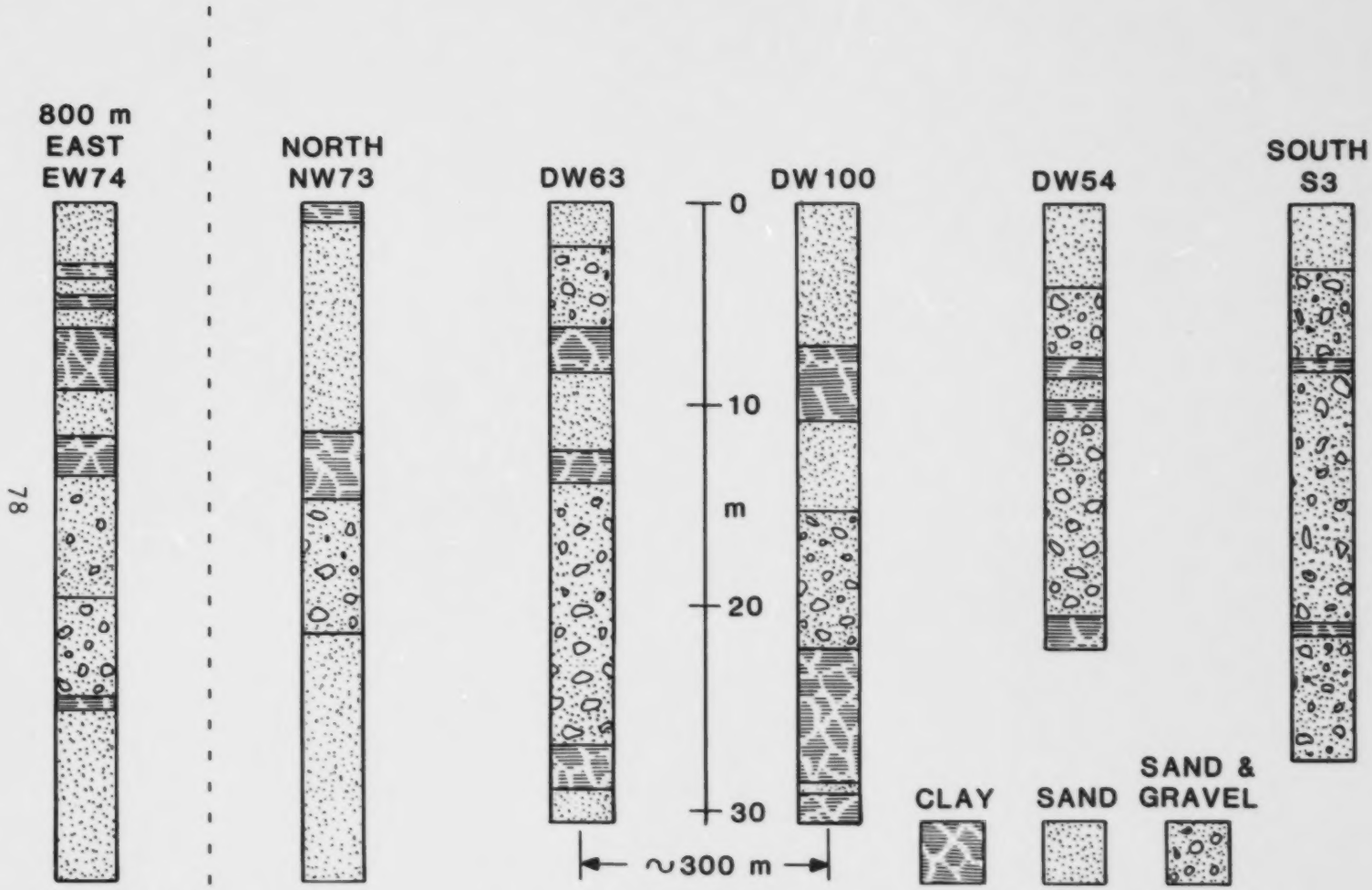

Figure 19. Generalized north-south stratigraphic section.

REMARKS

This monitoring information provides an extensive data base on the irrigated hydrologic system at the San Acacia site over four complete irrigation seasons. These observations provide a unique data base for comparative testing of the USBR-EPA irrigation return flow model. Additional information on the monitoring activities at the San Acacia site are available in Wierenga et al. (1979) and Wierenga et al. (1981). The next section emphasizes observations of natural variability of the irrigated hydrosalinity system at the San Acacia site.

SECTION 4

VARIABILITY

In this section the statistical procedure of spectral-covariance analysis is used to qualitatively examine the temporal and spatial salinity variations observed in field data at the San Acacia site. The space and time series to be examined are: (1) temporal variations of salinity in several observation wells, (2) temporal variations of the Rio Grande (irrigation water) and outflow drain (D2) salinity, (3) spatial variability of E. C. (decisiemens/m) and Cl (meq/l) in the shallow groundwater, and (4) vertical variability of groundwater salinity from sampled test holes with a 1.0 foot (30.5 cm) sampling interval.

The statistical procedure of spectral-covariance analysis can briefly be described as a means of sorting similar variations or variance encountered in a particular space or time series. Statistically the variance is a measure of the dispersion of data about the mean value. The covariance or autocovariance (for a single series) is a measure of the amount of correlation a particular series has with itself. For convenience the "auto" is dropped in the following discussion. The covariance is useful for determining whether successive observations of x are independent (uncorrelated) or dependent (correlated) in an average sense. If there is statistical dependence between adjacent data it may be important to know over what distance or time interval the data are correlated on the average. This average correlation interval can provide a useful criterion for comparison of series sampled from a particular process, such as water quality variations over different profiles in an alluvial aquifer.

A convenient correlation scale is the separation or lag at which the correlation function (the covariance divided by the variance) is equal to e^{-1} where e is the base of the natural logarithm; this scale is designated by λ in the following analyses.

The Fourier transform of the covariance function is the spectral density function or simply spectrum of the time or space series. The spectrum can be thought of as the distribution of variance over frequency (or wave number), or a sorting of variations in the data with regard to their individual

frequencies. A peak in the spectrum indicates which frequencies in the record have the most variance. The theory of spectral estimation is discussed in Jenkins and Watts, (1968).

All the covariance and spectral estimates are performed using the U.C.L.A. Biomedical Computer Program package (Dixon, 1976). Linear detrending was applied to all series and the number of lags was generally about 20% of the record length.

TEMPORAL VARIABILITY

Time Series of Electrical Conductivity, Chloride Concentration and Water Level

The spectral-covariance analyses have been performed using some of the temporal data (Gelhar and others, 1980) and will not be repeated here. The purpose of this section is to present a general overview of the temporal variability at various locations on the farm.

Most of the shallow groundwater wells show weekly fluctuations in electrical conductivity (EC) and chloride concentration (Cl) but do not show long term trends. Water levels in these wells fluctuate in response to irrigation and to unusually large precipitation events. Time series plots for well #10 of EC, Cl, and water level are presented in Figure 20; these are typical of many of the shallow wells. The large dip in the water table elevation series near week 220 is probably the result of an incorrect tape reading or incorrect recording of the data.

In Section 3 on Monitoring the temporal fluctuations of drain discharge of drain 2 were presented. The drain discharge can fluctuate over a large range due to irrigation. The EC and Cl time series for drains 1 and 2, and for the Rio Grande are presented in Figure 21. In general, the drains show considerable fluctuation in quality, but do not show any consistent trends.

The large decreases in drain 2 salinity during the irrigation season are due to direct surface runoff of applied water off the ends of the fields and to the effect of ponded water at the ends of the fields. The large peaks observed before the 1980 irrigation season in drain 1 and before the 1981 season in both drains is due to dredging of the drains. Another point of interest is that drain 2 is consistently slightly lower in salinity than drain 1.

The Rio Grande salinity (sampled from the conveyance canal) shows a yearly cycle of decreased salinity during the irrigation season. This is due, in part, to the fact that the many reservoirs along the Rio Grande release water in the summer. This water is largely snowmelt whereas the water in the river

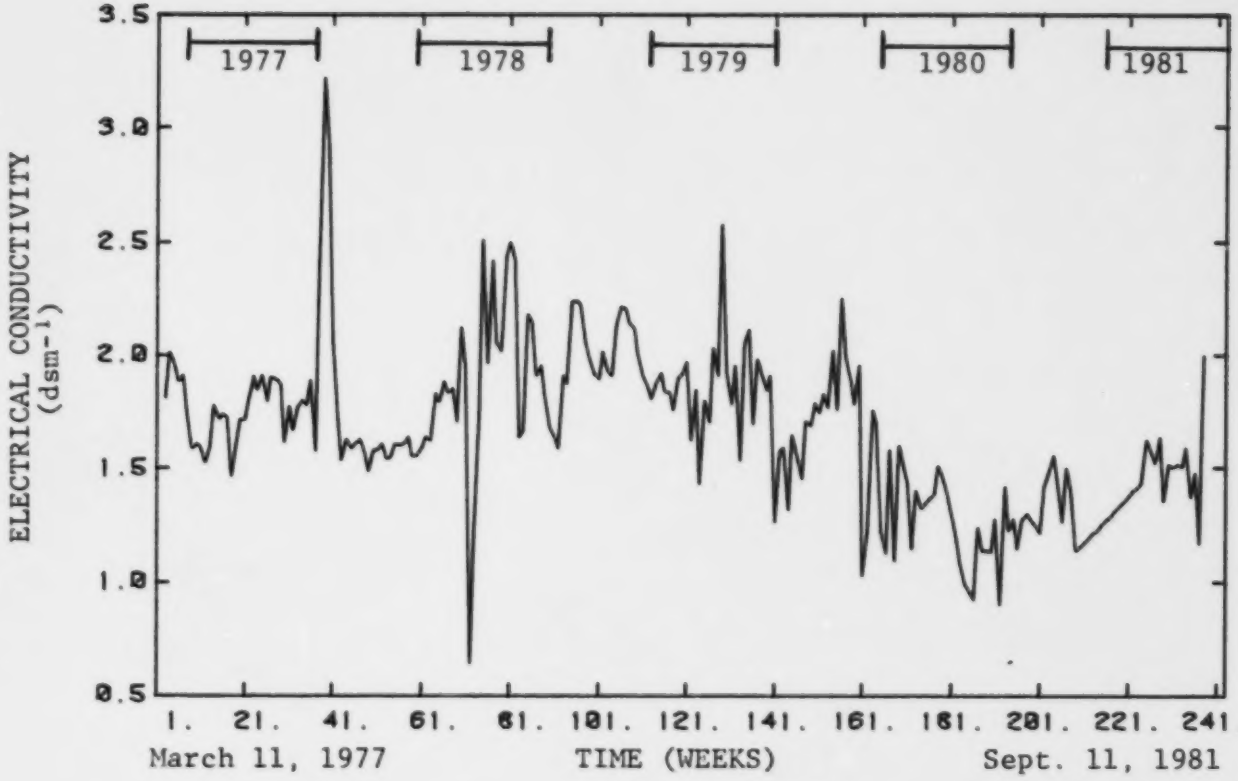

Figure 20a. Weekly electrical conductivity time series for well 10; the irrigation seasons, April 1 to October 30, for each year are indicated.

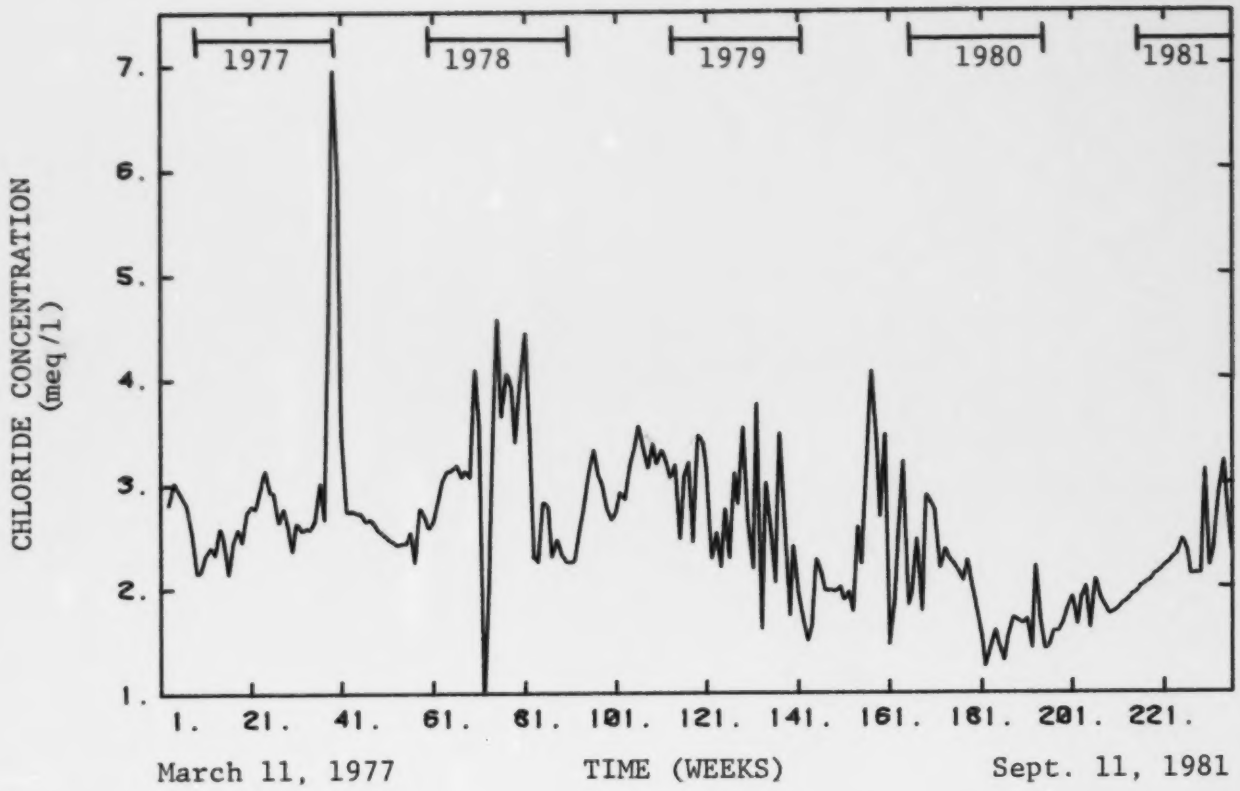

Figure 20b. Weekly chloride concentration time series for well 10; the irrigation seasons, April 1 through October 30, are indicated for each year.

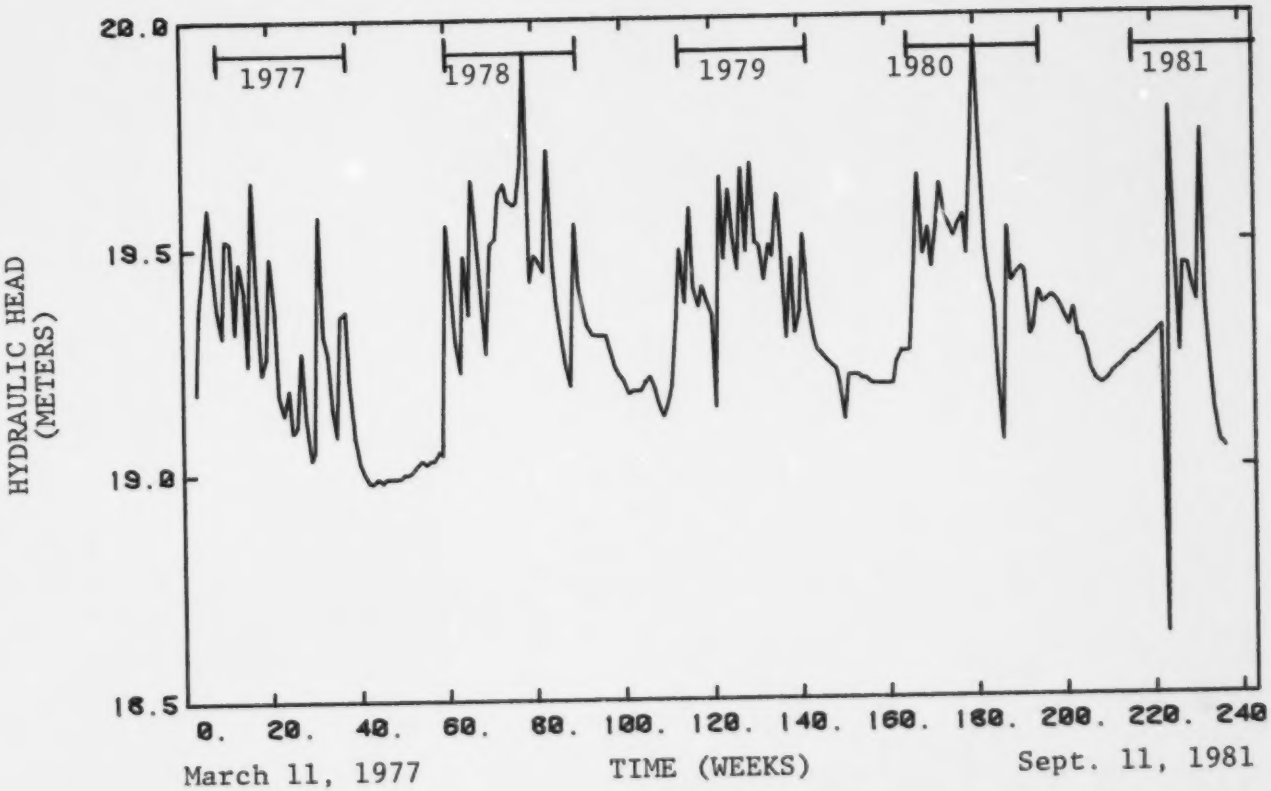

Figure 20c. Hydraulic head, meters above 1,400 meter datum, time series for well 10; the irrigation seasons are indicated.

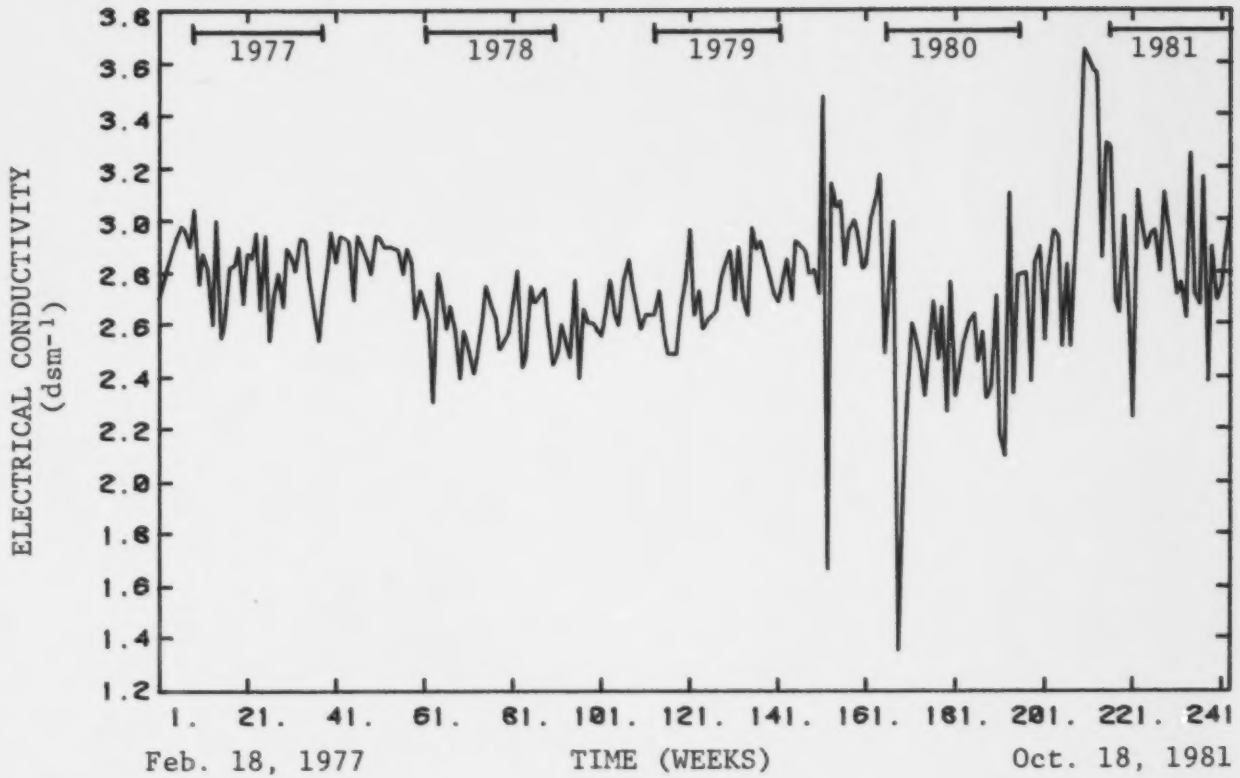

Figure 21a. Weekly electrical conductivity time series for drain 1; the irrigation seasons, April 1 through October 30, are indicated for each year.

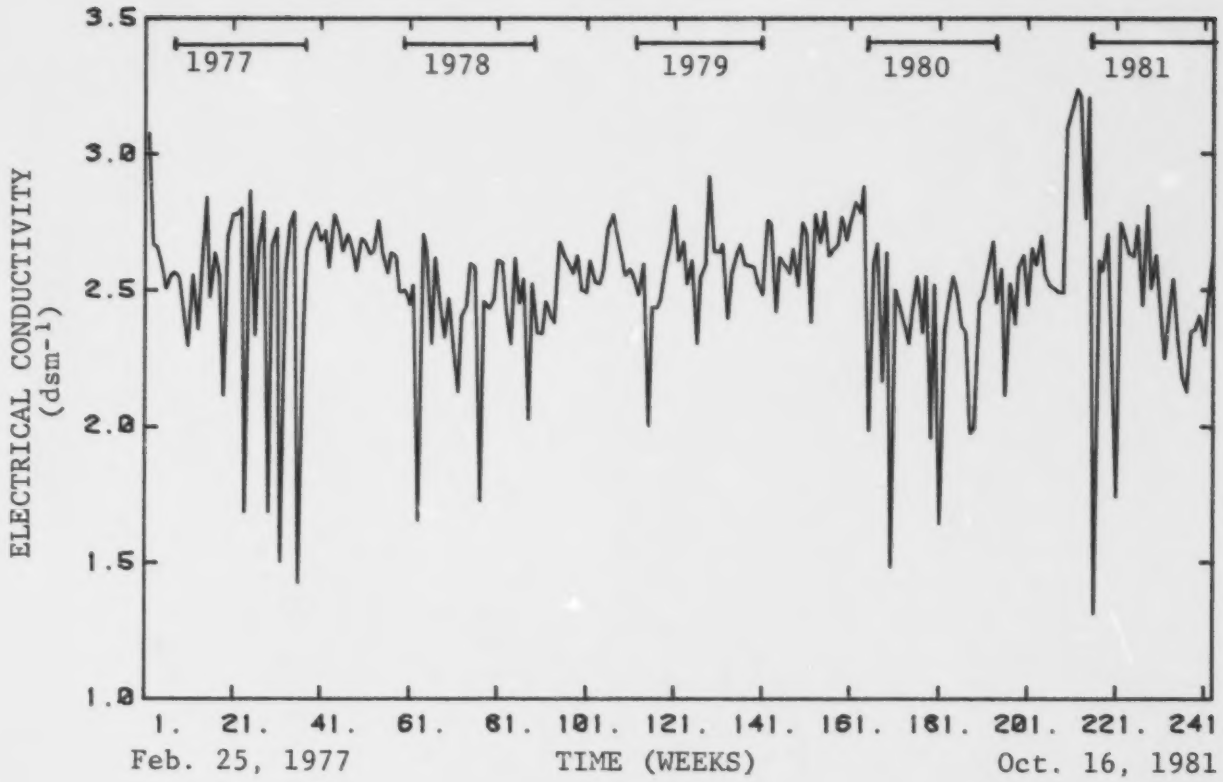

Figure 21b. Weekly electrical conductivity time series at drain 2; the irrigation seasons, April 1 through October 30, for each year are indicated.

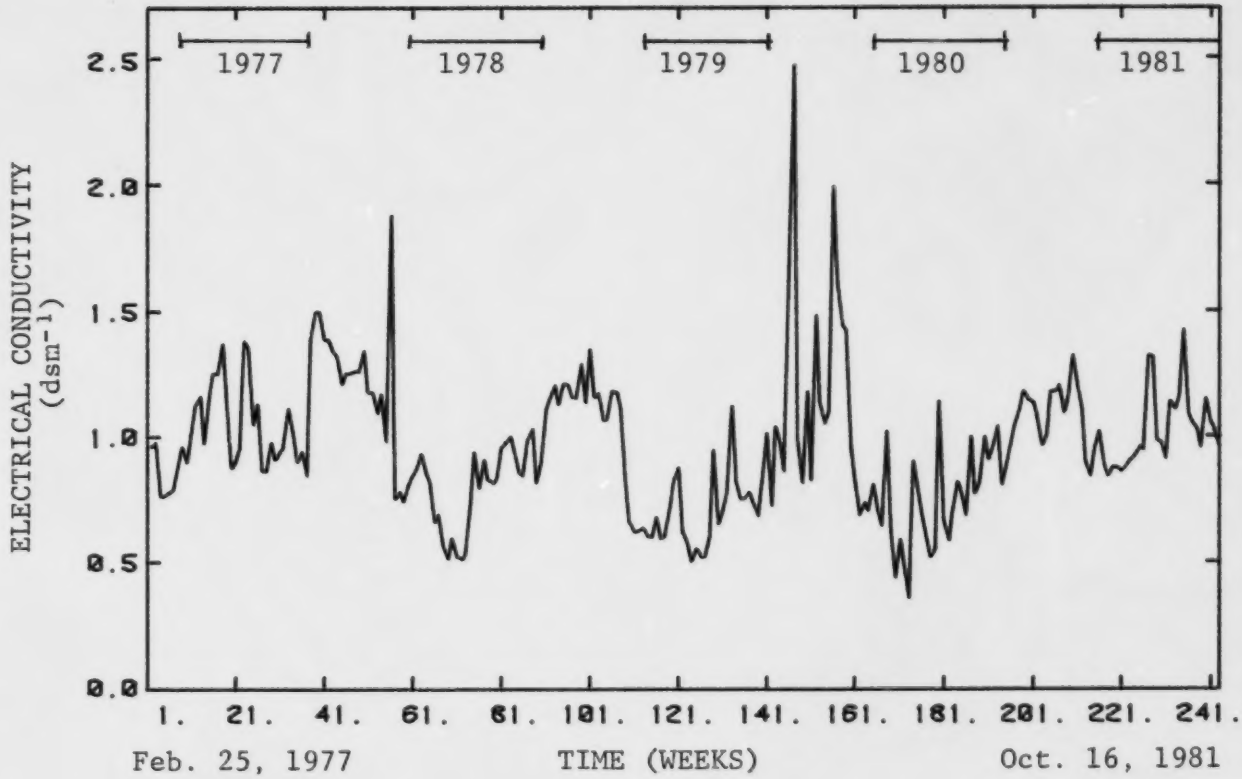

Figure 21c. Weekly electrical conductivity time series for the Rio Grande; the irrigation seasons, April 1 through October 30, are indicated for each year.

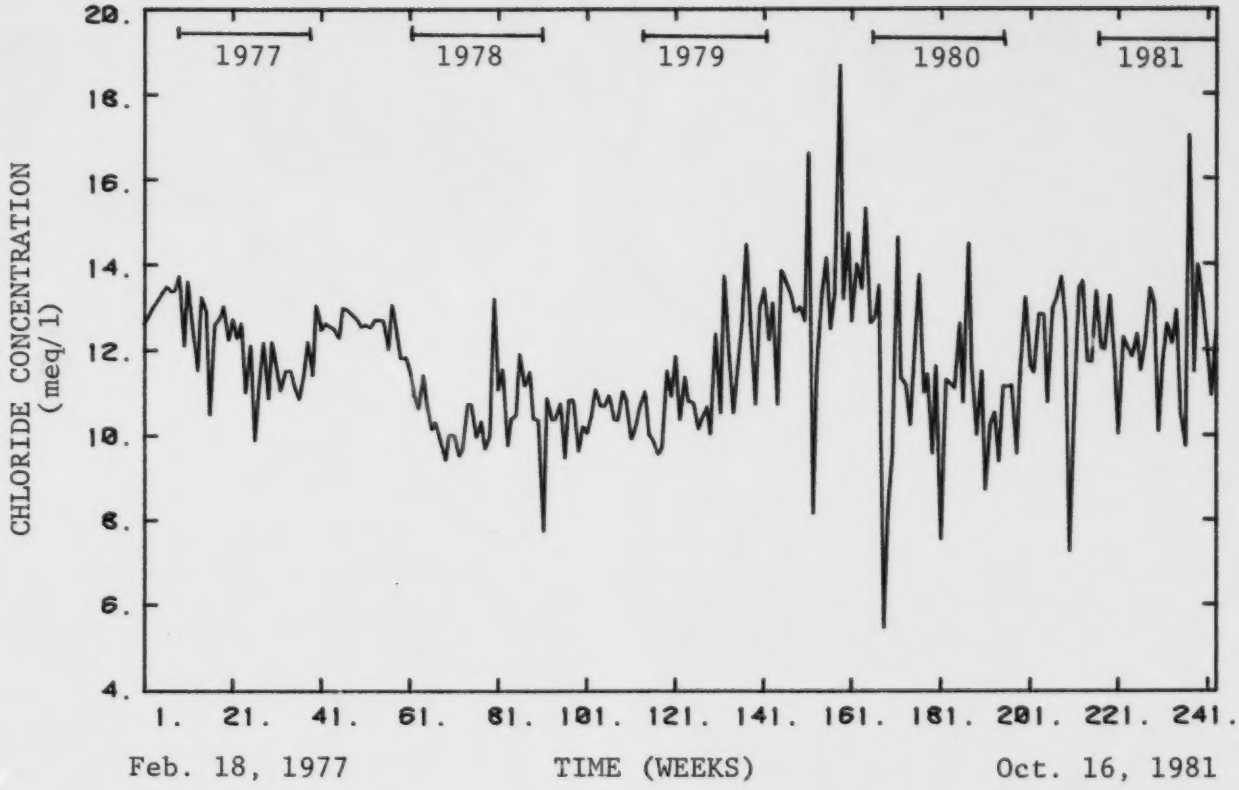

Figure 21d. Weekly chloride concentration time series for drain 1; the irrigation seasons, April 1 through October 30, are indicated for each year.

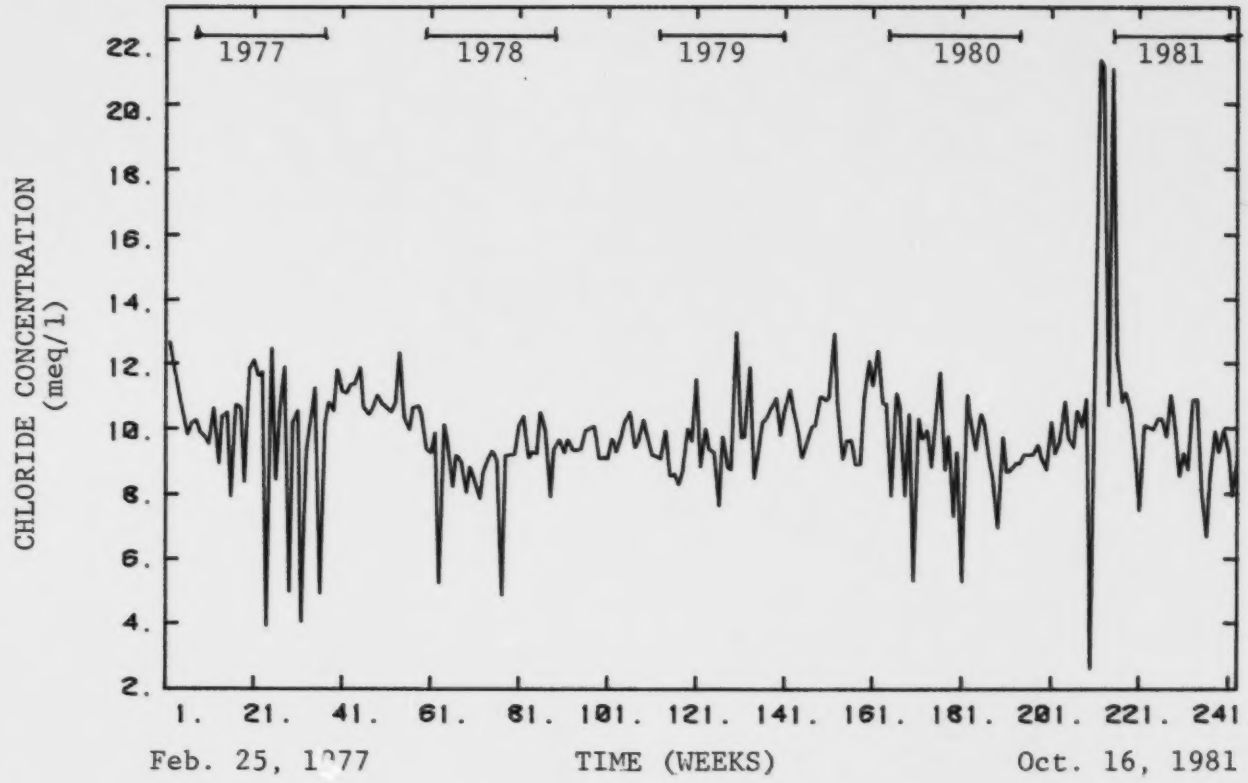

Figure 21e. Weekly chloride concentration time series for drain 2; the irrigation seasons are indicated for each year.

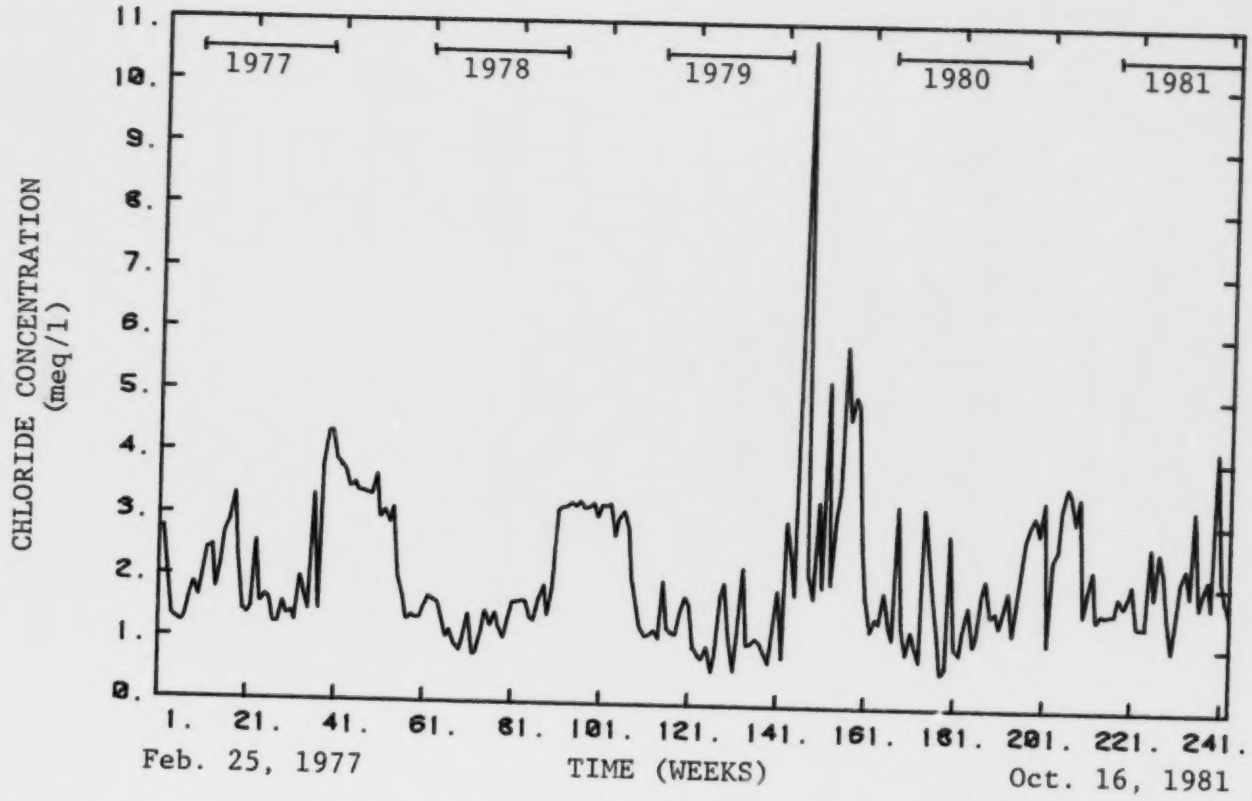

Figure 21f. Weekly chloride concentration time series for the Rio Grande; the irrigation seasons, April 1 through October 30, are indicated for each year.

during the winter has a greater proportion of groundwater. The large peak in salinity during the winter of 1979-1980 is probably due to dredging of the conveyance canal.

Recall from the irrigation efficiency calculations presented earlier that the shallow groundwater salinity and chloride are about 2.5 times greater than the applied water. The electrical conductivity and chloride of the drains are about 3 and 6 times greater, respectively, than the applied water. This indicates that water other than the shallow groundwater is entering the drains because chloride is assumed a conservative solute and no source of chloride exists in the shallow aquifer.

Some wells have an annual cycle of salinity that fluctuates between the salinity of the shallow groundwater and that of the drains, or higher. Well 13 (3 m deep) near the main drain and well DW25 (7.6 m deep) at the weather station are examples of these. The EC and Cl time series of these wells are presented in Figures 22 and 23.

The visually averaged high and low salinity and chloride for wells 13 and DW25 are presented in Table 17. Also presented are the shallow groundwater, applied water, the drains, deep well DW50, and shallow wells north of the farm.

The low values for well 13 are consistent with the shallow groundwater and the high values for well 13 are consistent with the drains. The low values of well DW25 are similar to the shallow groundwater and the high values are consistent with the deep well, DW50 (see Figure 24). Wells 13 and DW25 have an amazingly similar cyclic pattern (Figures 22 and 23). The salinity and chloride drop about 2/3 through the irrigation season and increase about January of each year. The cyclic pattern indicates the high salinity water enters the groundwater during the winter and is flushed out by irrigation during the summer.

The deeper wells at the weather station show consistently very high EC and Cl (for well DW50,15.2 m deep), see Figure 24). The shallow wells north of the farm (numbers 25 -29) have generally similar chemistry to that of the drain 1 at sample point 12.

The differences in water quality will be elaborated upon in SECTION 5 on the GROUNDWATER FLOW SYSTEM.

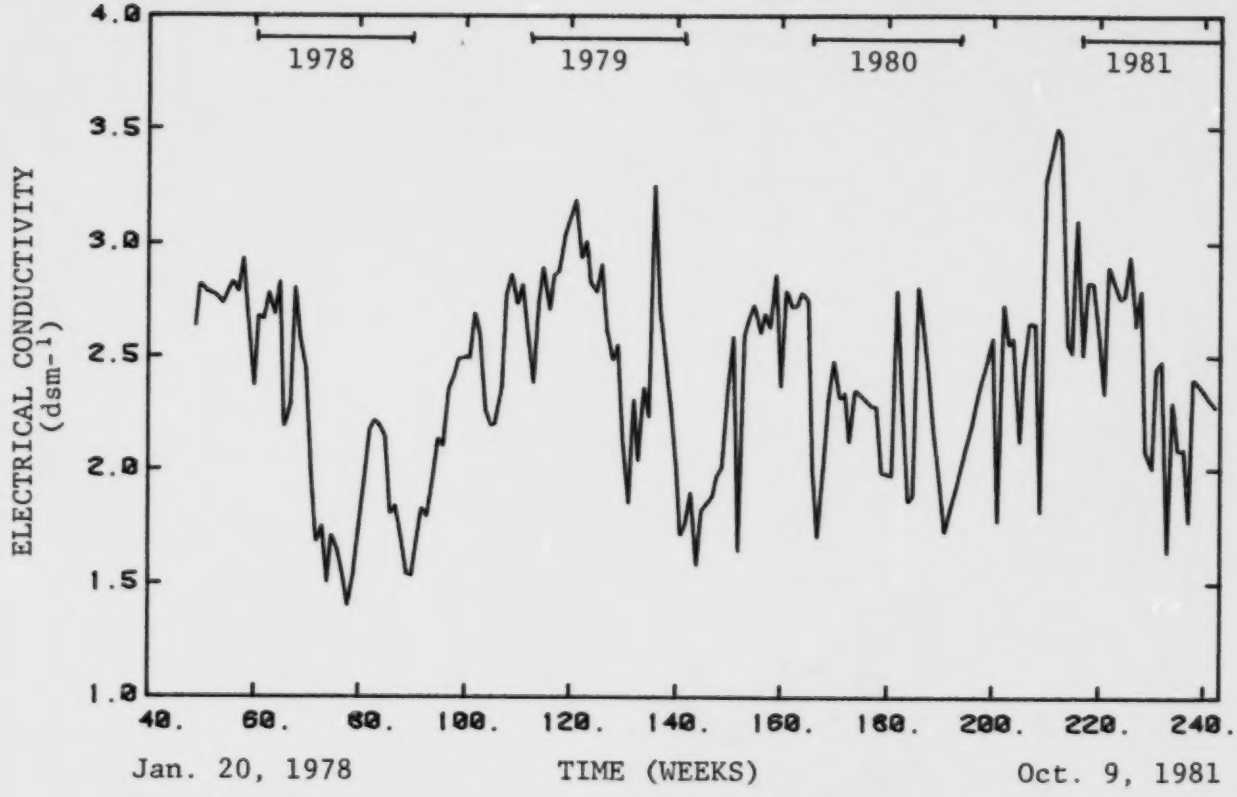

Figure 22a. Weekly electrical conductivity time series for well 13; the irrigation seasons are indicated for each year.

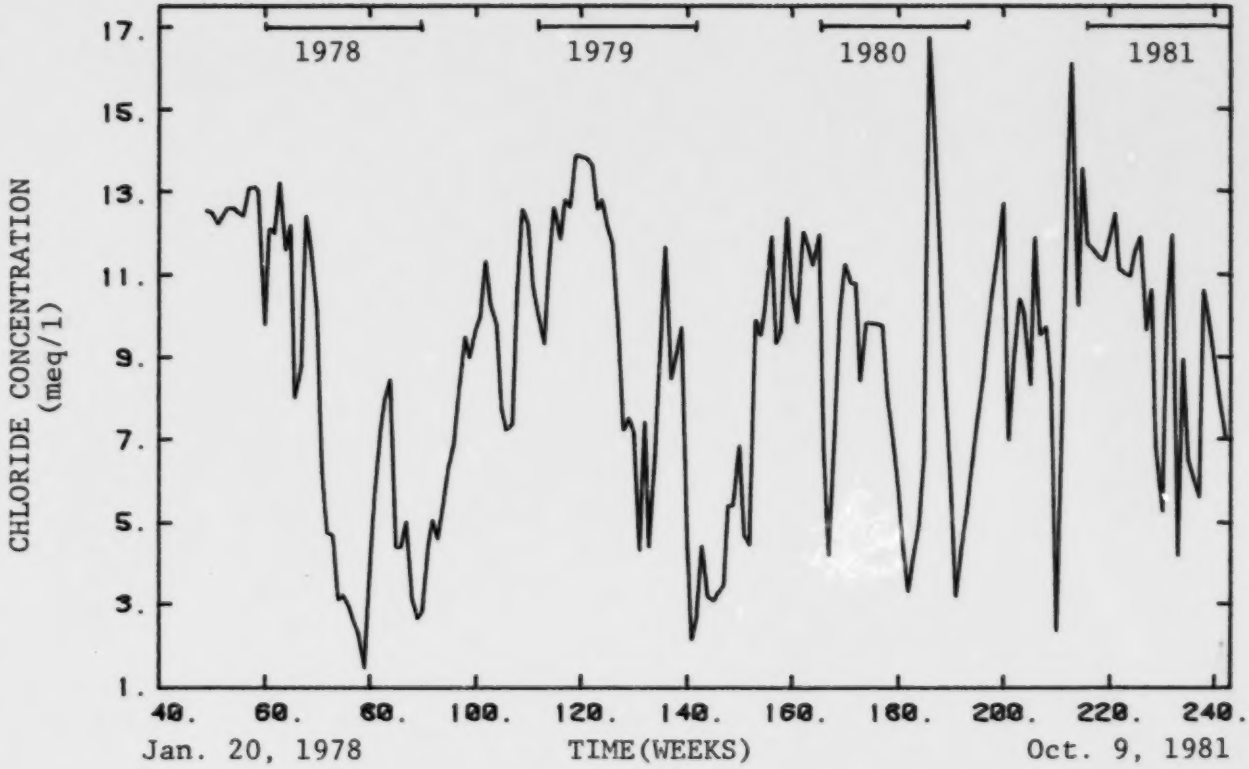

Figure 22b. Weekly chloride concentration time series for well 13; the irrigation seasons, April 1 through October 30, are indicated for each year.

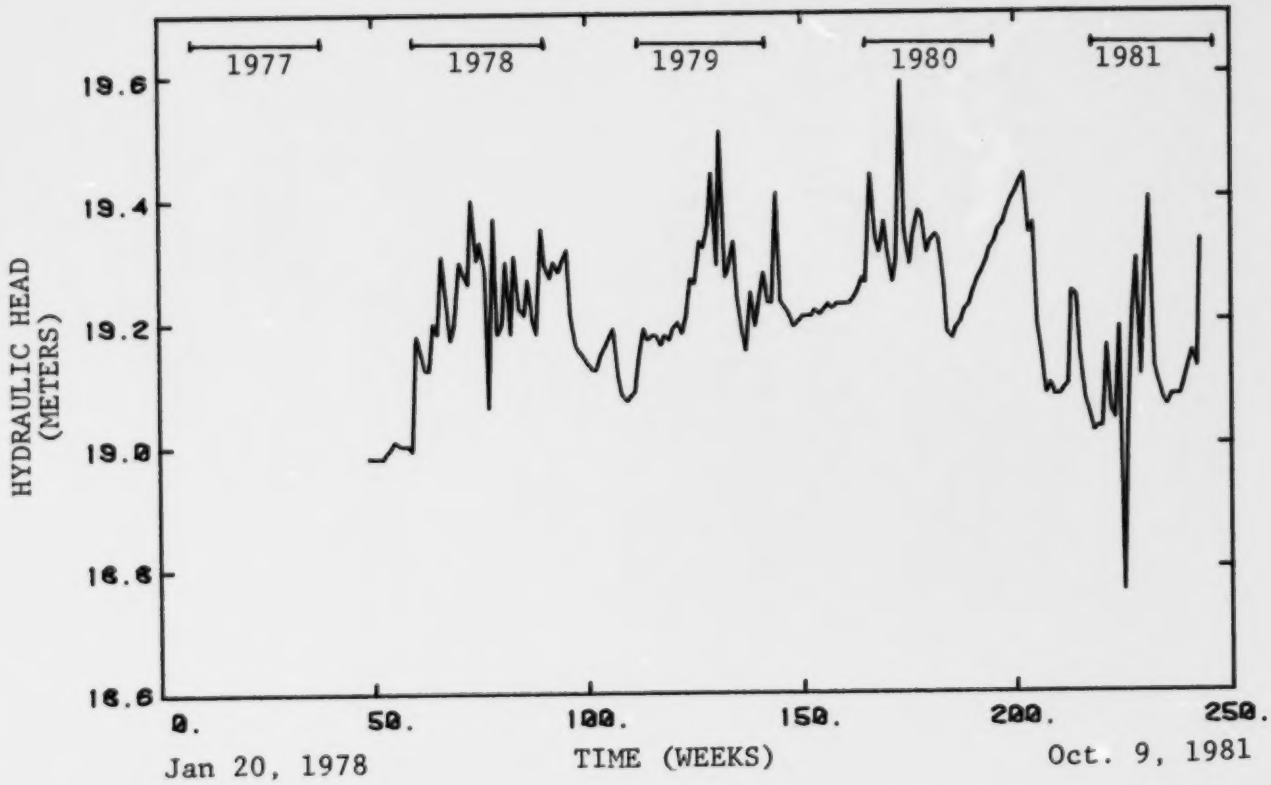

Figure 22c. Hydraulic head, meters above 1,400 meter datum, for well 13; the irrigation seasons are indicated.

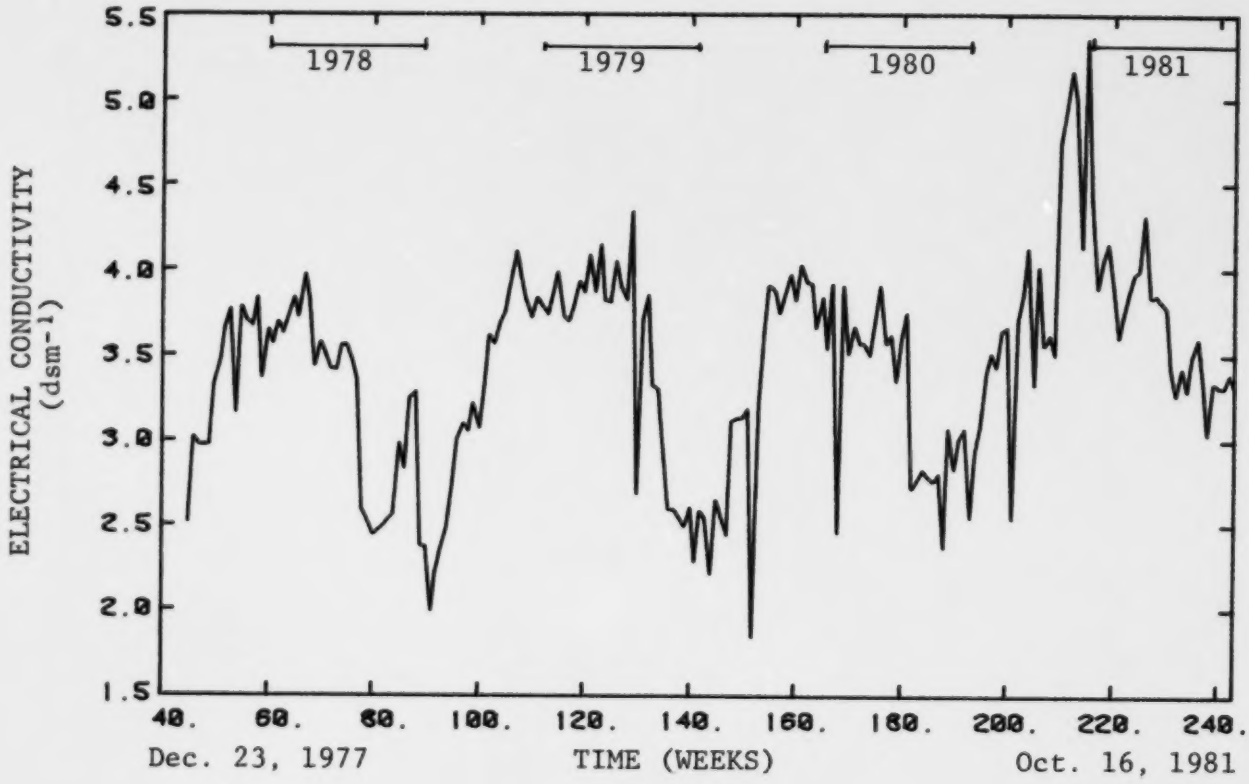

Figure 23a. Weekly electrical conductivity time series for the 7.6 meter deep well at the weather station (DW 25); the irrigation seasons, April 1 through October 30, are indicated for each year.

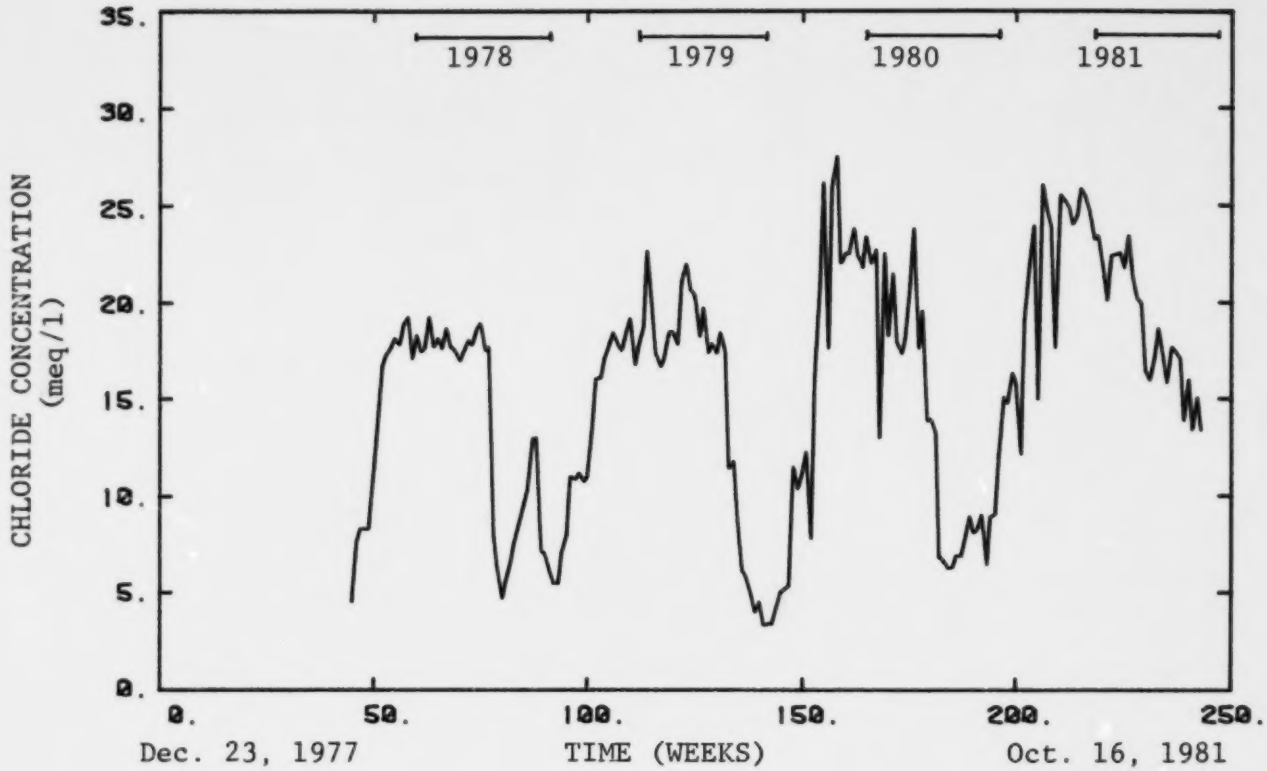

Figure 23b. Weekly chloride concentration time series at the 7.6 meter deep well at the weather station (DW 25); the irrigation seasons are indicated.

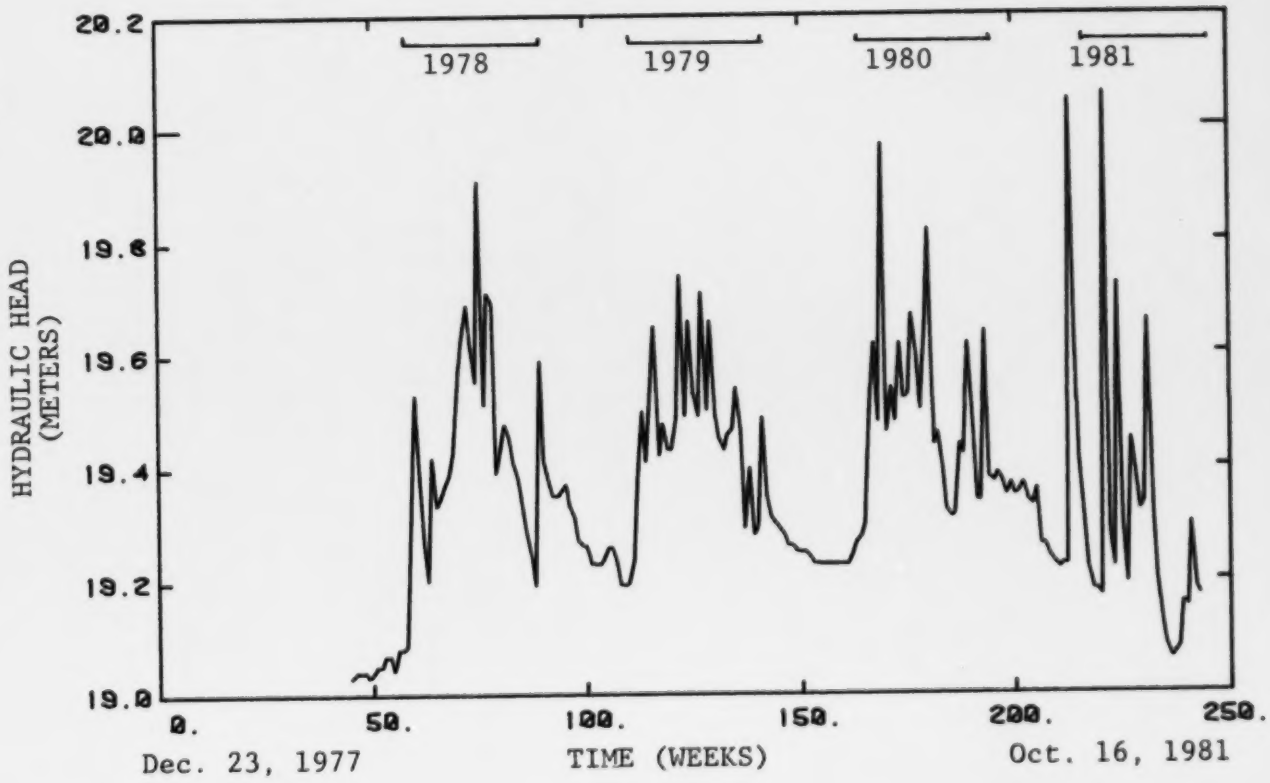

Figure 23c. Hydraulic head, meters above 1,400 meter datum, for the 7.6 meter depth well at the weather station (DW 25); the irrigation seasons are indicated.

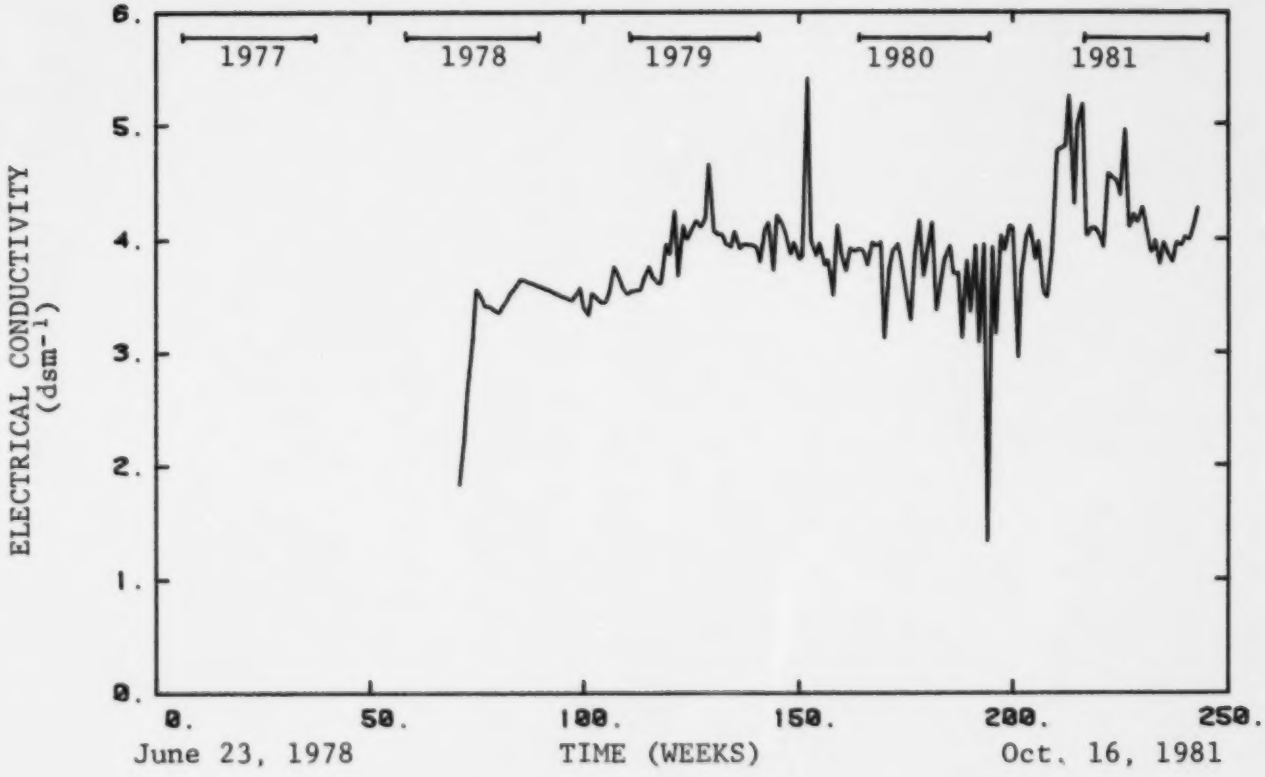

Figure 24a. Weekly electrical conductivity time series for the 15.2 meter deep well at the weather station (DW 50); the irrigation seasons are indicated.

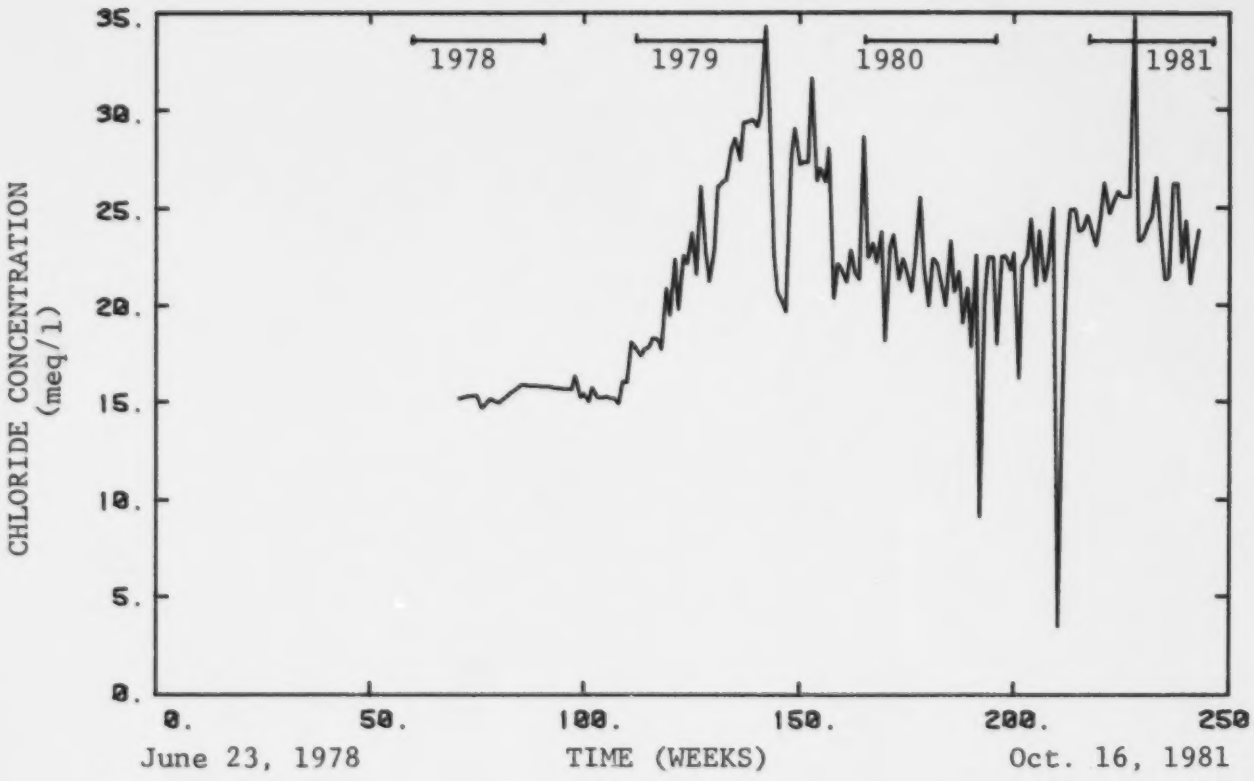

Figure 24b. Weekly chloride concentration time series for the 15.2 meter deep well at the weather station (DW 50); the irrigation seasons are indicated.

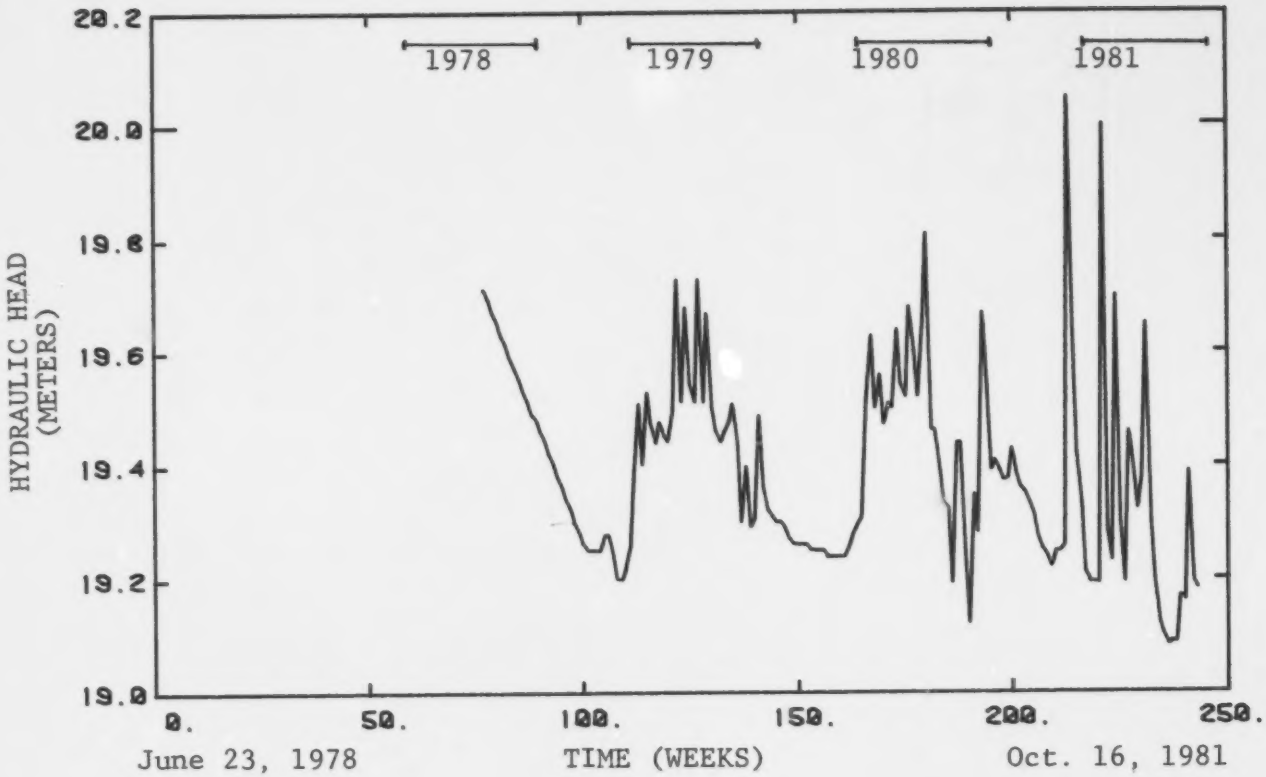

Figure 24c. Hydraulic head, in meters above a 1,400 meter datum, for the 15.2 meter deep well at the weather station (DW 50); the irrigation seasons are indicated.

TABLE 17.

Five year average electrical conductivity (dsm^{-1}) and chloride (meq/l) at selected sample locations.

Sample	EC	Cl
shallow groundwater	2.26	3.61
applied water	0.93	1.99
well 13 (low)	2.0	4.0
well 13 (high)	2.7	11.0
well DW25 (low)	2.5	7.0
well DW25 (high)	3.8	19.0
drains 1 and 2	2.58	10.62
north wells (25,27,28,29)	2.72	11.55
well DW50	3.76	20.73

NOTE: The high and low averages for wells 13 and DW25 were obtained visually from Figures 22 and 23.

SPATIAL VARIABILITY

The spatial variability of water chemistry and aquifer properties is a generally recognized phenomenon in natural systems. A number of experiments were performed in order to measure the spatial variability of water quality and aquifer parameters on the farm.

Much of the data concerning horizontal variability were collected from the two transects which crossed portions of the farm (see Figure 5). Aquifer samples taken from vertical boreholes were analyzed to examine vertical variability.

North-South Transect

A large variety of data was collected at a 7.6 m (25 foot) spacing along the north-south transect. The infiltration rate of the surface soil was measured with a single ring infiltrometer and soil samples were collected and analyzed for EC and Cl.

The soil in the capillary fringe was sampled and analyzed for EC and Cl. Grain size parameters were determined and used to predict the hydraulic conductivity. Samples of the shallow groundwater were collected and analyzed for EC, Cl, and nutrients.

Surface Soil--

The infiltration rate, electrical conductivity, and chloride concentration provides some insight into the movement of irrigation water through the surface soil.

Infiltration rate--The infiltration rate of the surface soil was measured and soil samples were collected for EC and Cl analyses. The soil sample collection was a separate operation from the infiltration measurements. The infiltration rate was measured in a 35 cm diameter single ring infiltrometer which was operated at a constant head for one day before steady rates were measured. Assuming vertical one dimensional flow, the steady state infiltration rate is an approximation of the hydraulic conductivity.

The measured steady state infiltration rate is shown in Figure 25. The natural log of the infiltration rate is shown in Figure 25b. On both figures the + signs are the measured infiltration rates before plowing and planting. The large difference in measurements indicates that the condition of the soil is a critical factor. Because the steady state infiltration rate is a measure of the hydraulic conductivity and was found to be log normally distributed, spectral-covariance estimates will be made only for the natural log series. The covariance and spectral estimates are presented in Figures 25c and 25d. The standard deviation of the natural log series is 1.01.

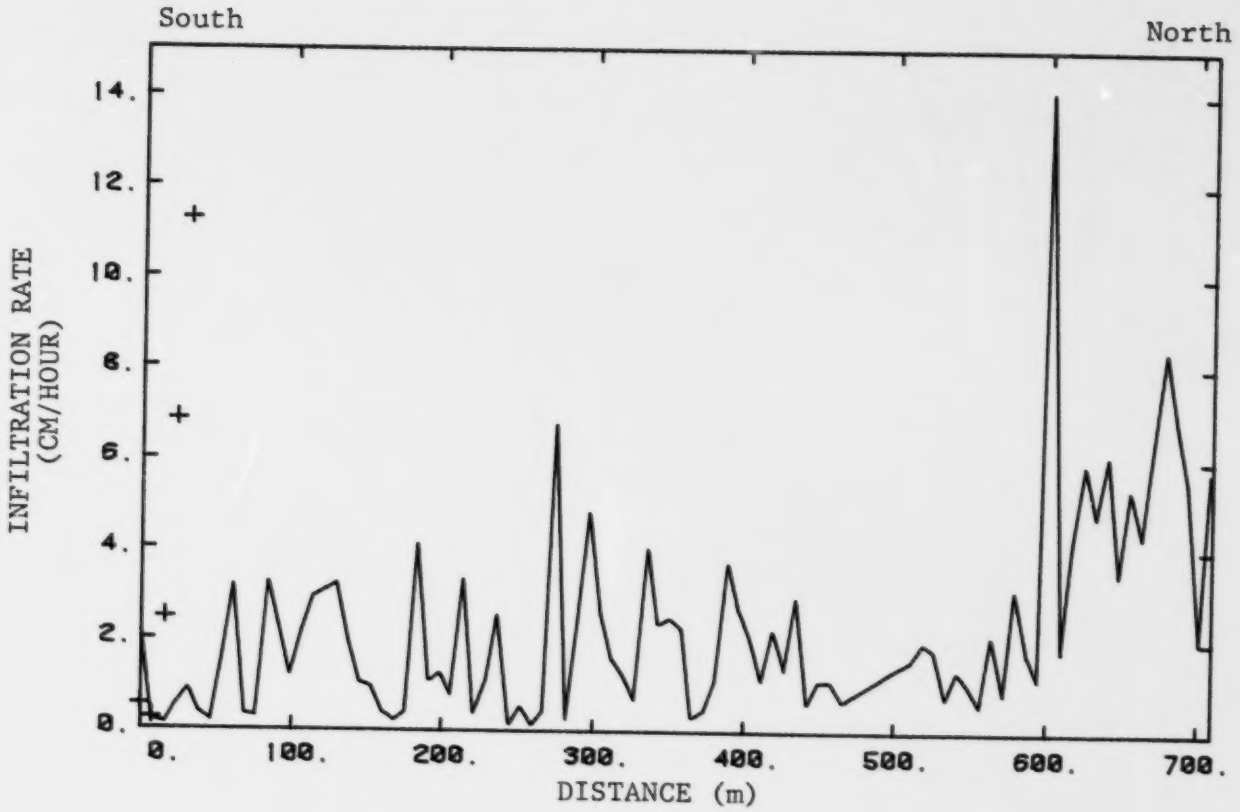

Figure 25a. Steady state infiltration rate on the north-south transect; the + indicates the infiltration rate measured before plowing and planting.

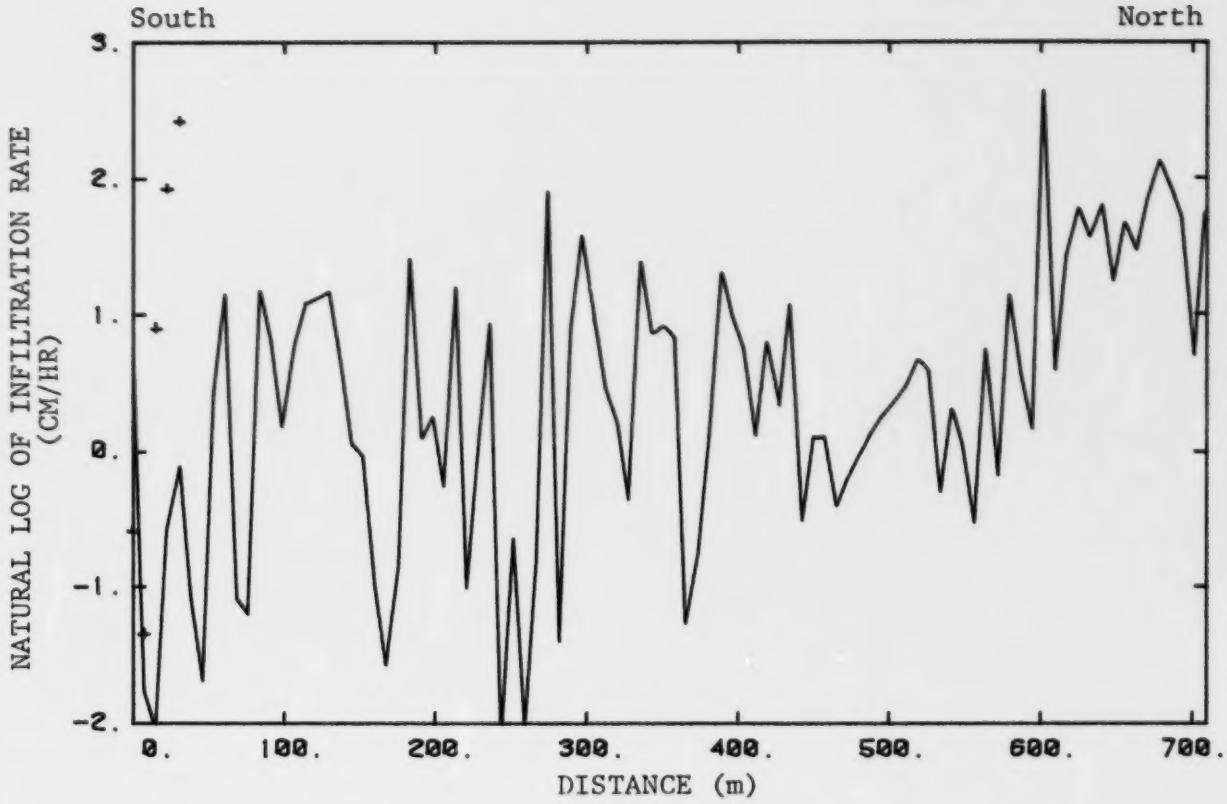

Figure 25b. Natural log of the steady state infiltration rate on the north-south transect; the + indicates the infiltration rate measured before plowing and planting.

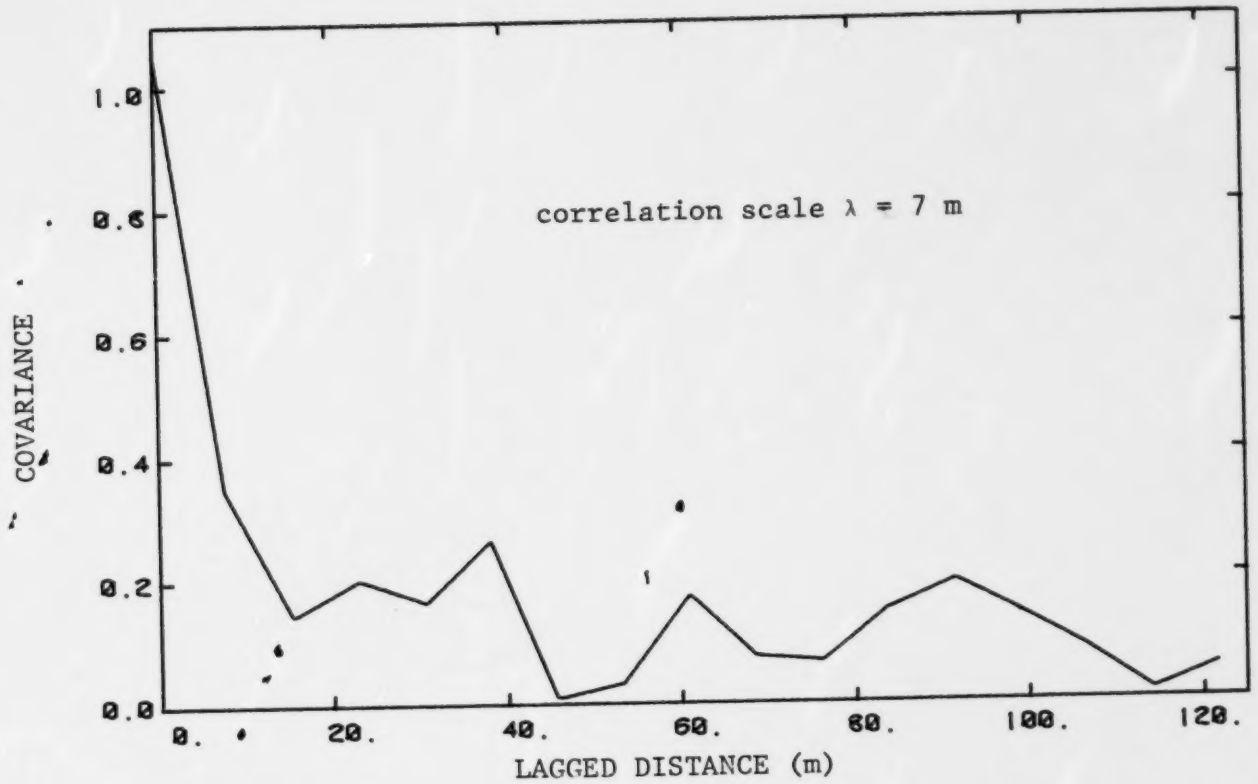

Figure 25c. Covariance of the natural log of the steady state infiltration rate (cm/hr) on the north-south transect.

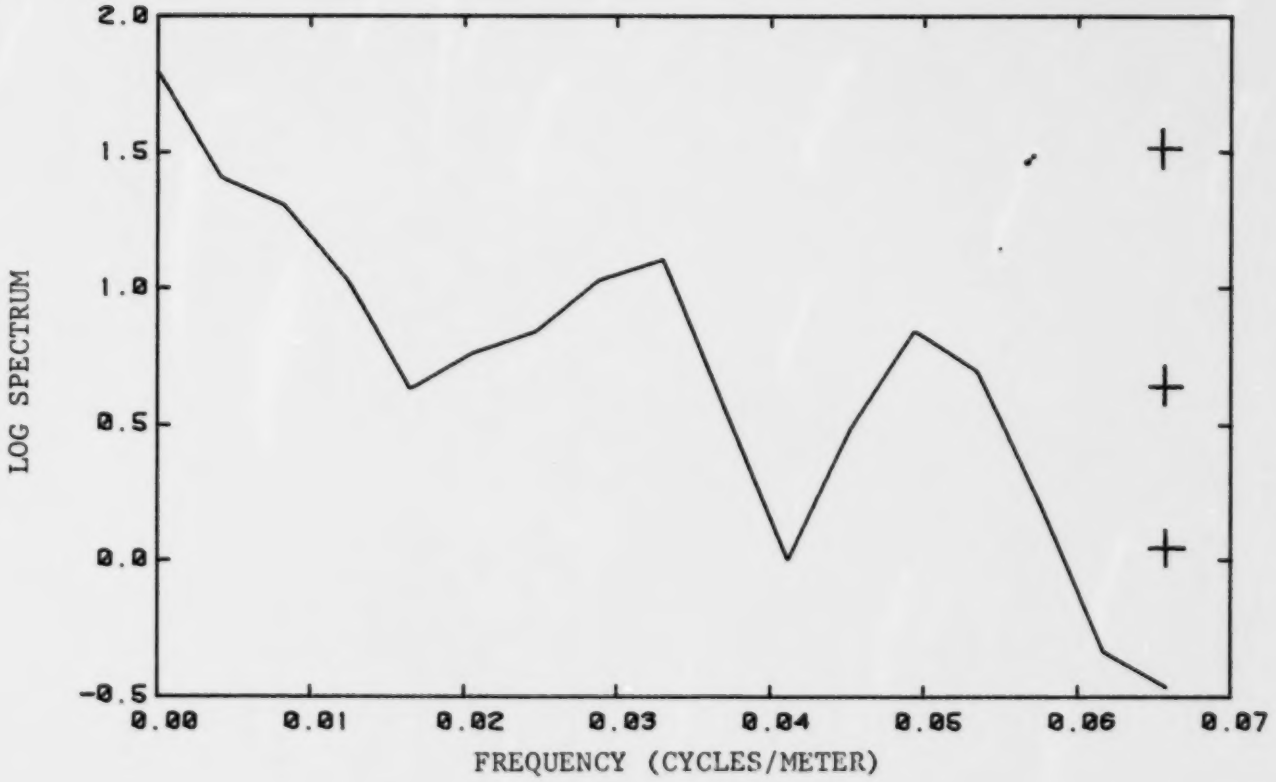

Figure 25d. Spectral estimate of the natural log of the infiltration rate (cm/hr) on the north-south transect; the + indicates the 95% confidence intervals.

The electrical conductivity and chloride concentration measurements were from soil water extract analyses done by the Soil and Water Testing Laboratory of New Mexico State University.

Electric conductivity--The space series of electrical conductivity as measured from the water extract is shown in Figure 26a. A large variation is observed in these data. The covariance and spectrum are given in Figures 26b and 26c.

Chloride concentration--The space series of chloride concentration of the surface soil is presented in Figure 27a. In general the variation appears to be less than that observed for EC, the few spikes in the series yield a variance nearly twice the mean. The covariance and spectrum are given in Figures 27b and 27c. The covariance appears to be of a "hole function" type in that the correlation becomes negative at some lag distance.

Capillary Fringe--

At the same time as the surface soil samples were collected samples of the capillary fringe were also obtained. The hole from the surface sample was simply augered deeper to the capillary fringe. Each sample was mixed and split in half. Both halved samples were sent to the Soil and Water Testing Laboratory of New Mexico State University. One half was analyzed for electrical conductivity and chloride concentration by soil water extract analysis and the other half was used for grain size distribution analysis. From the grain size distribution, the geometric mean grain size and phi deviation of each sample were determined and used to predict the saturated hydraulic conductivity.

Electrical conductivity-- The space series of electrical conductivity of the capillary fringe (Figure 28a) shows a large degree of variation. An interesting item to observe is the "mound" of high EC in the middle of the transect. The EC mound is nearly midway between the two drains and extends from just south of well 10 on the north to midway between wells 5 and 6 on the south. It is unlikely that the mound is related to the Alamillo Ditch. The depth to groundwater is less due to groundwater mounding so that the higher EC mound may be due to evaporation directly from the groundwater. The covariance and spectral estimates are given in Figures 28b and 28c.

Chloride concentration-- The chloride concentration of the capillary fringe was measured by soil extract analysis. A common measurement from soil extract analysis is the percent of water added to the air dry sample by volume. The concentration of the extract can be converted to the concentration in the water in an

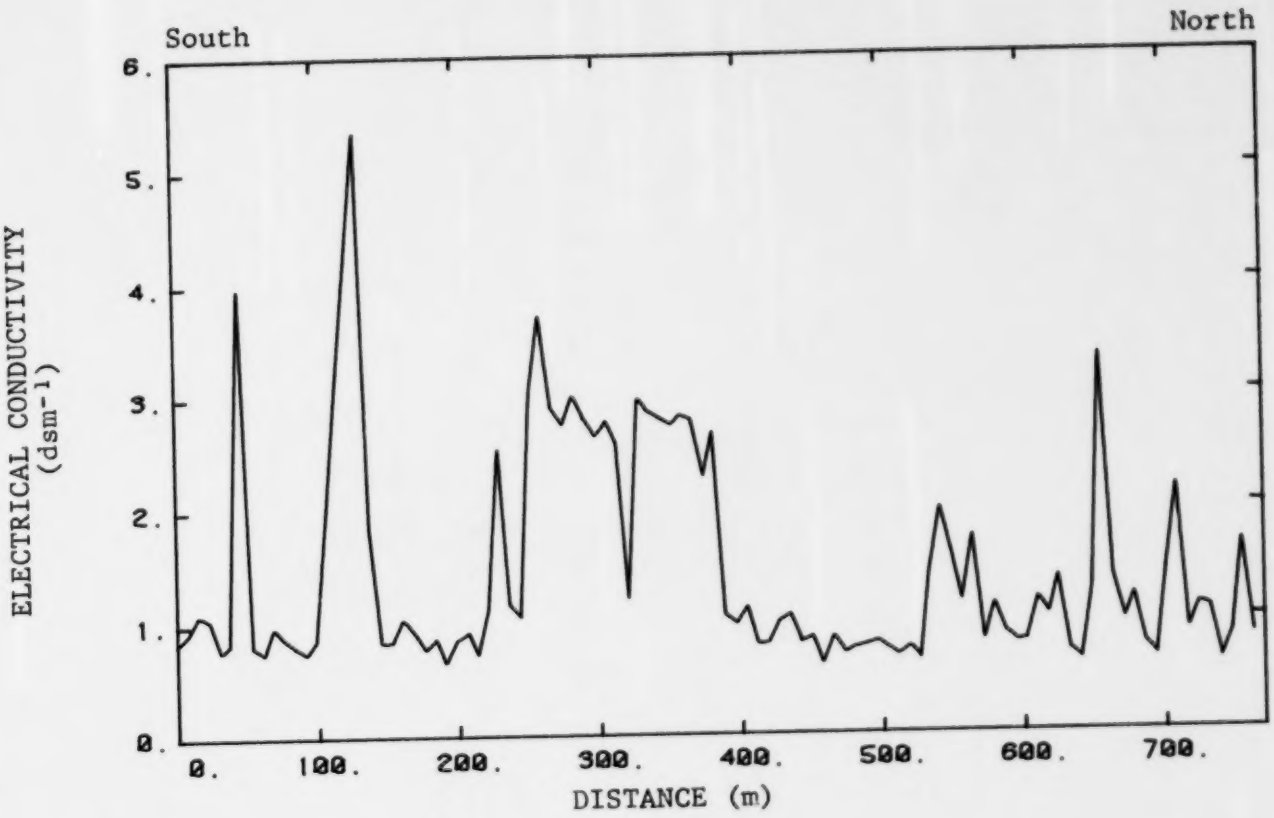

Figure 26a. Electrical conductivity of the surface soil on the north-south transect.

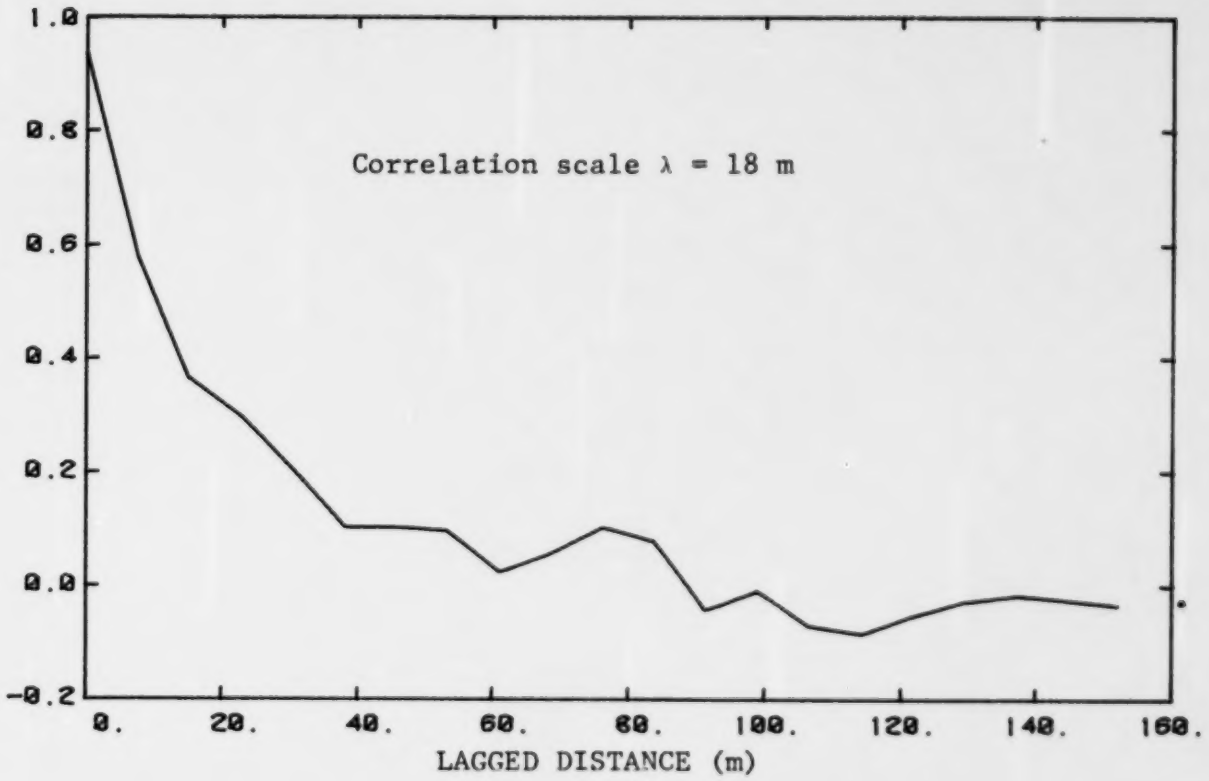

Figure 26b. Covariance estimate of the electrical conductivity in the surface soil on the north-south transect.

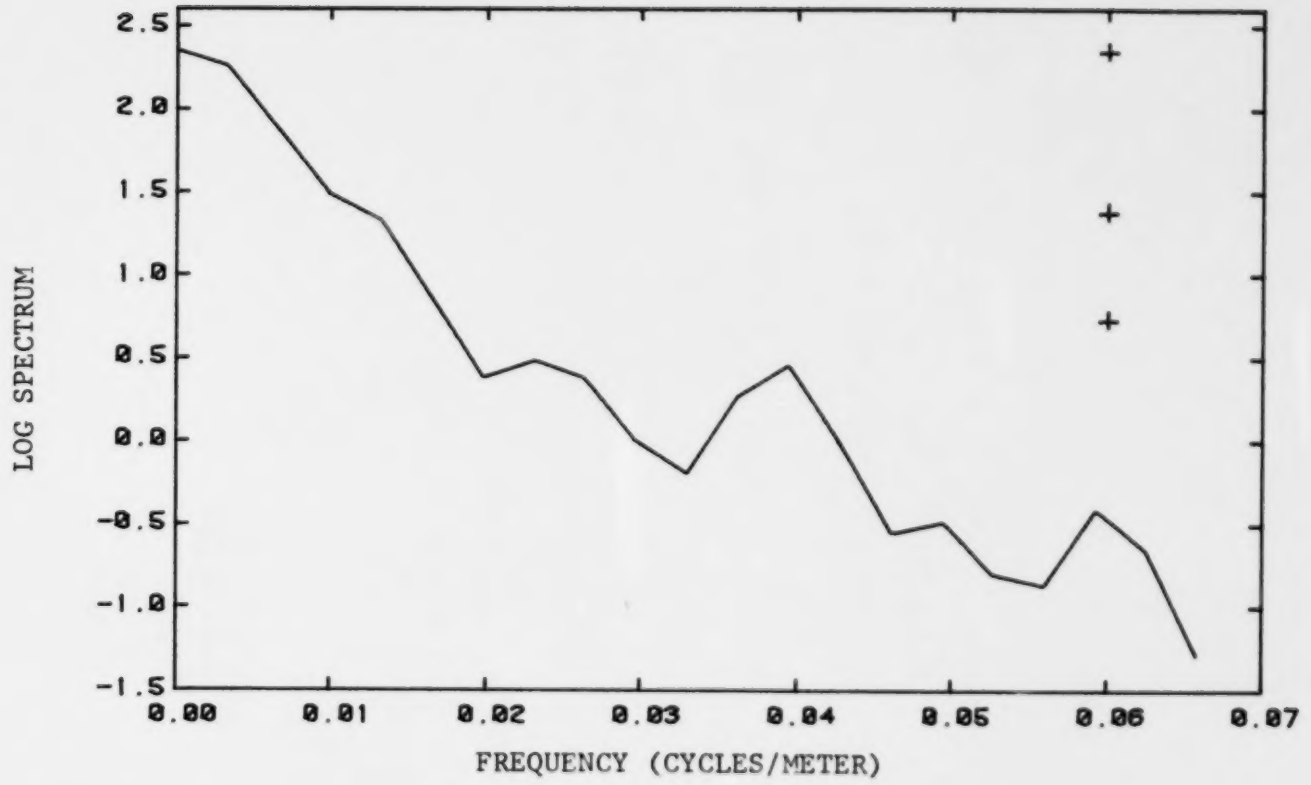

Figure 26c. Spectral estimate of the electrical conductivity in the surface soil on the north-south transect; the + represents the 95% confidence intervals.

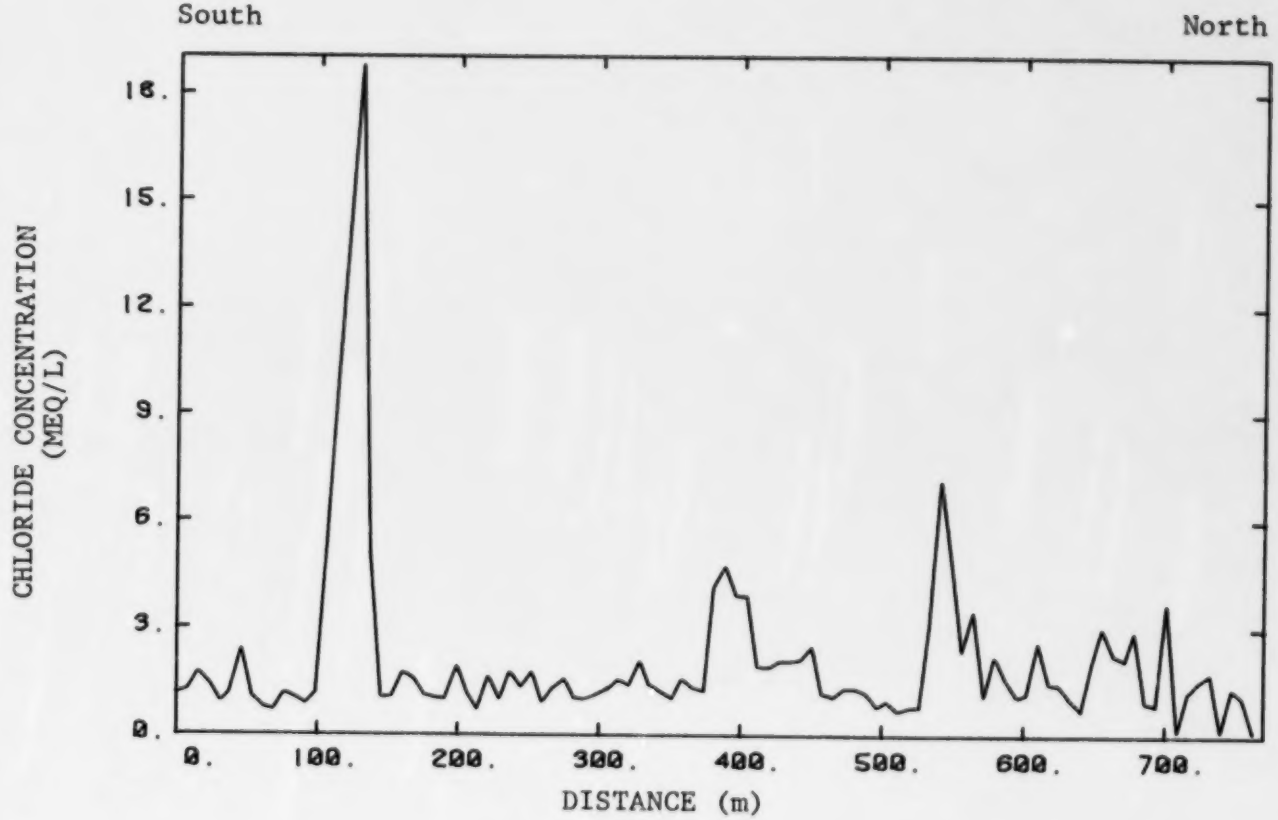

Figure 27a. Chloride concentration of the surface soil on the north-south transect.

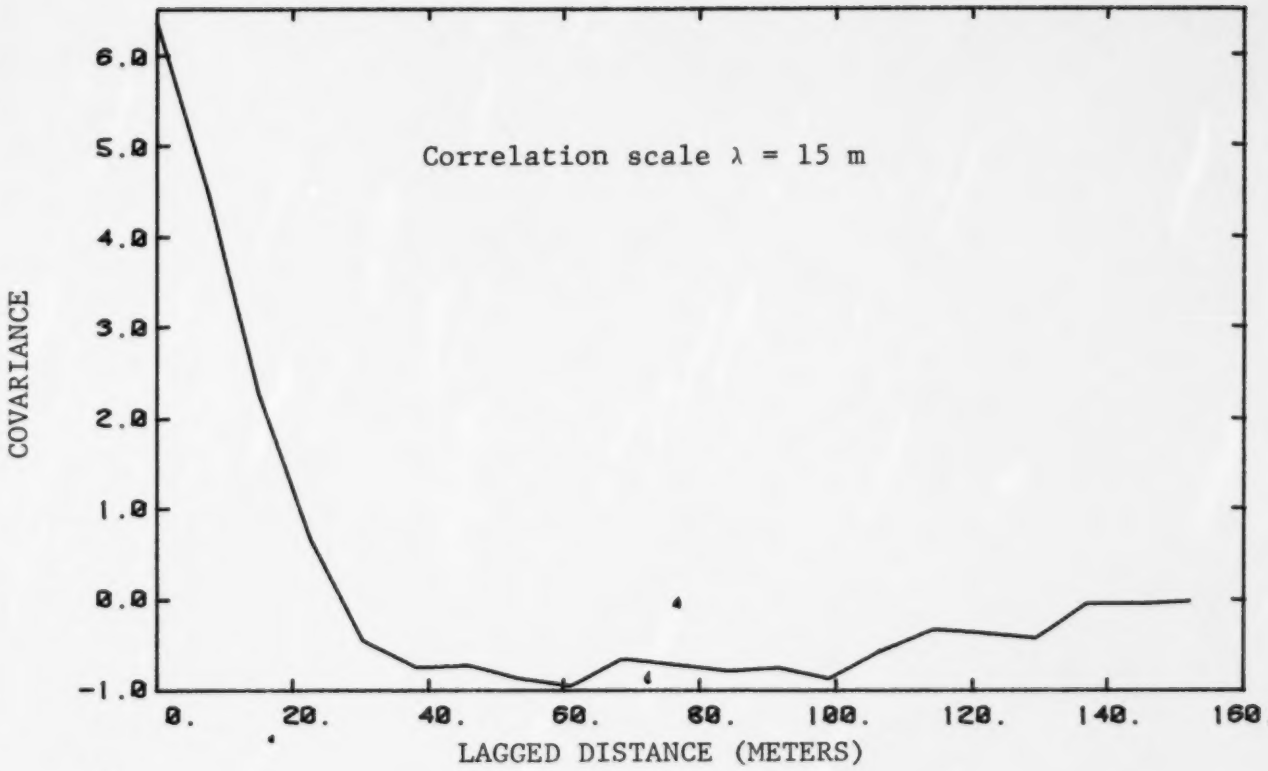

Figure 27b. Covariance estimate of the chloride concentration of the surface soil on the north-south transect.

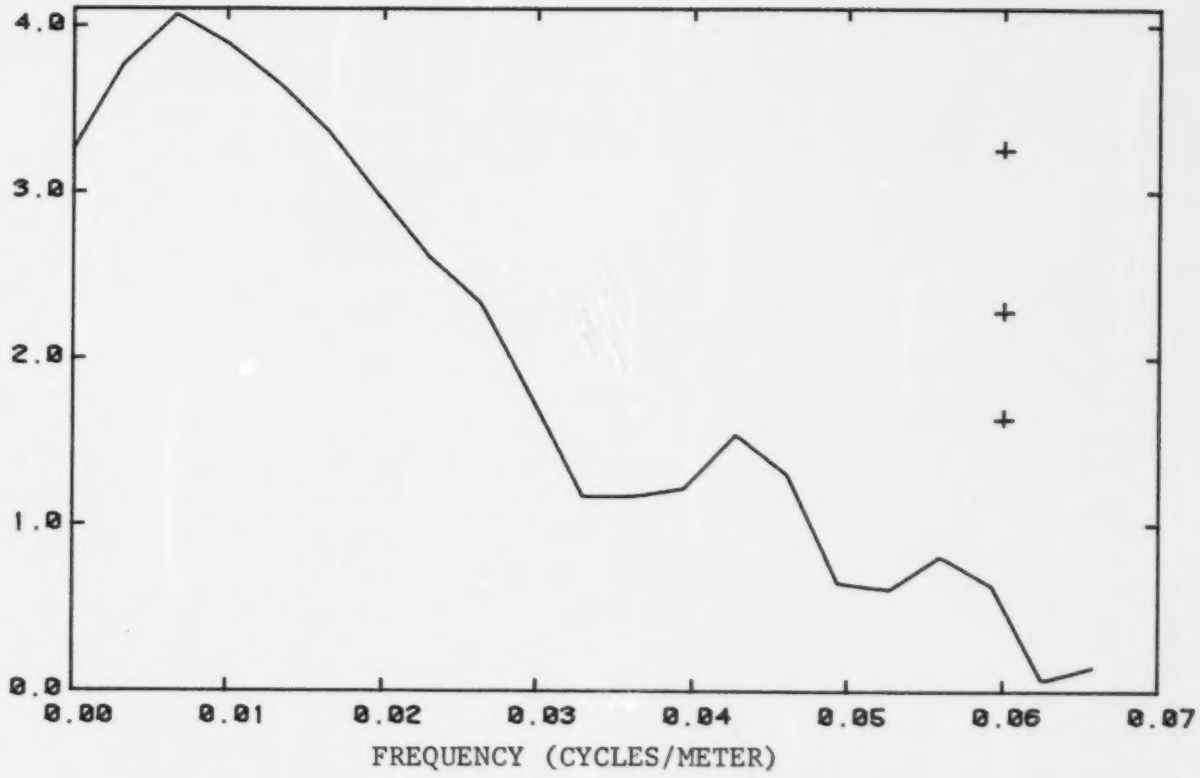

Figure 27c. Spectral estimate of the chloride concentration in the surface soil on the north-south transect; the + represent the 95% confidence intervals.

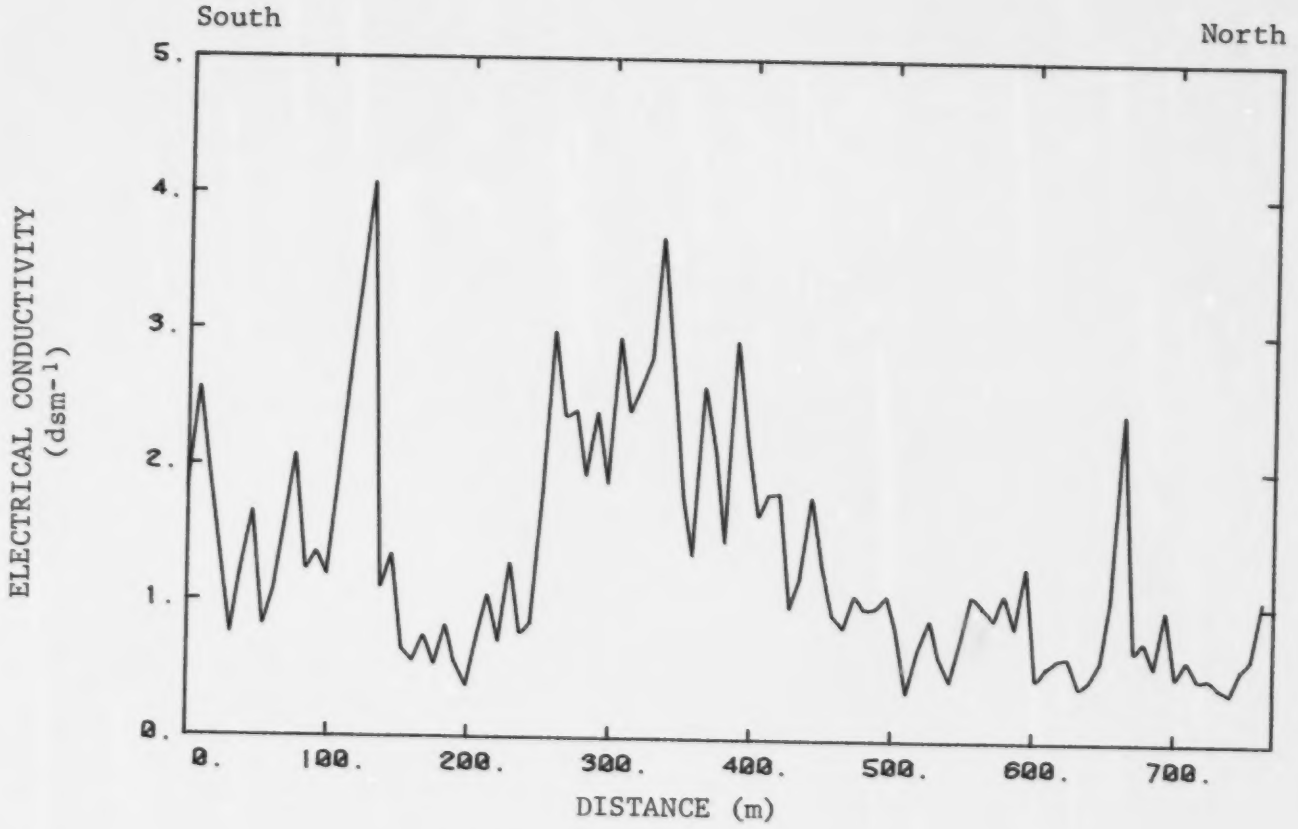

Figure 28a. Electrical conductivity of the capillary fringe on the north-south transect.

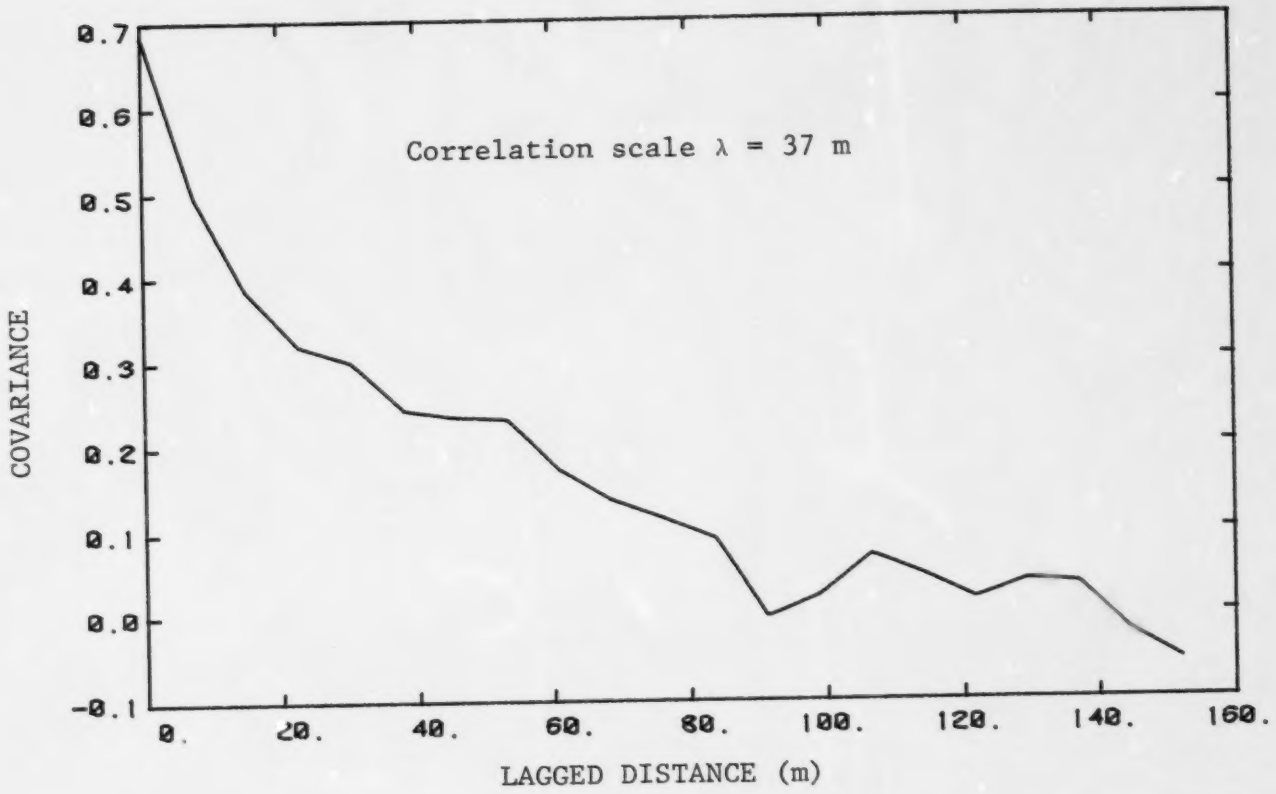

Figure 28b. Covariance estimate of the electrical conductivity of the capillary fringe on the north-south transect.

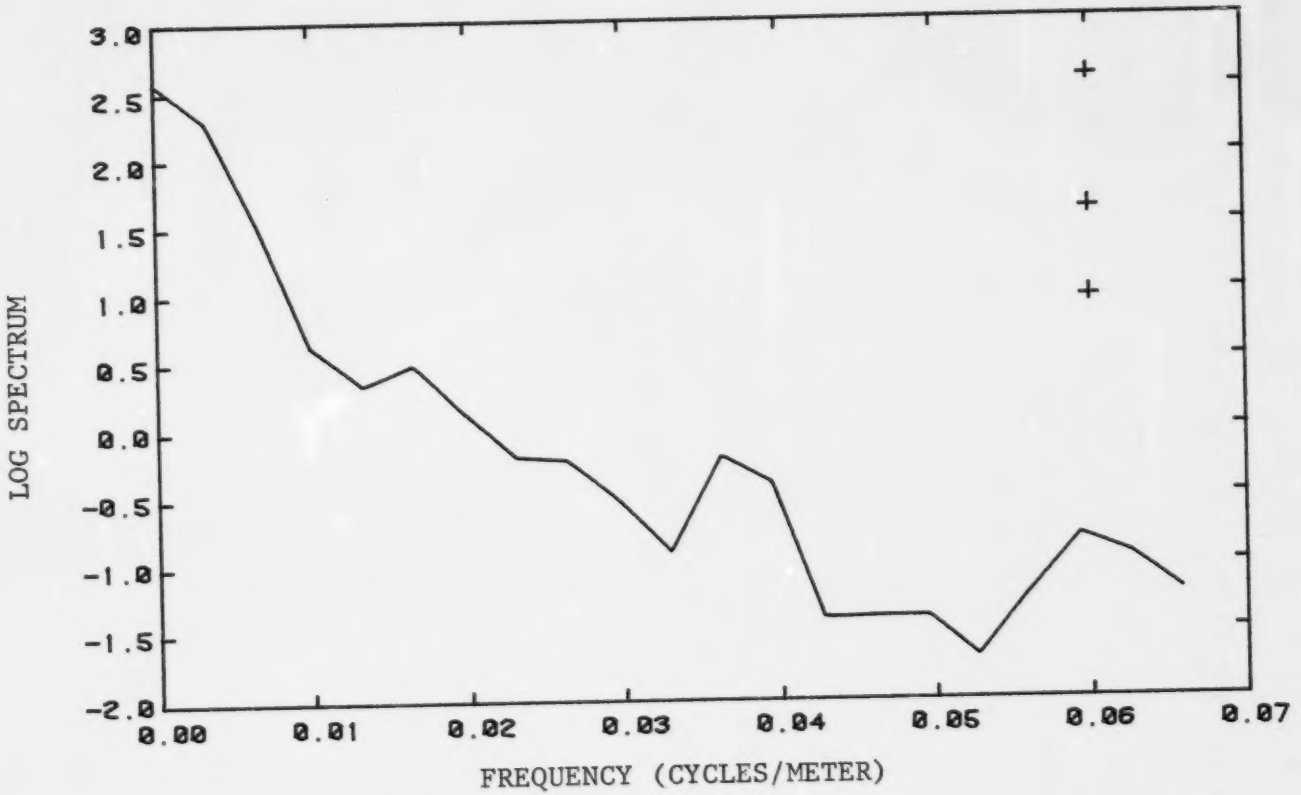

Figure 28c. Spectral estimate of the electrical conductivity of the capillary fringe on the north-south transect; the + indicates the 95% confidence intervals.

undisturbed saturated sample by the following formula

$$C = (\rho_b \, EX)/(100\eta)$$

where C = concentration of species in the water in a saturated soil, ρ_b = bulk density, η = porosity, E = percent of water added to the sample, X = concentration of species i in the extract.

The percent of water added to the sample was not available for all soil extract analyses performed. However, data were available for the capillary fringe chloride concentration, so two sets of spectral-covariance analyses were performed, one on the extract chemistry data, and the other on C from the above equation. The reason for the two analyses was to see the effect that may be introduced into the spectral-covariance estimates of soil extract analyses not corrected for percent water.

The space series of the chloride concentration of the extract and the chloride concentration corrected for percent water are given in Figures 29a and 29b respectively. For the corrected series, the bulk density was assumed to be 1.6 gm/cm^3 and the porosity was taken to be 0.38. One can see that the two series show the same general trends but in detail they differ significantly in some places. Part of the difference is surely due to the assumption of the same bulk density and porosity for all the samples. In any case, we would like to see if these two series produce significantly different spectral- covariance estimates. The covariance for the uncorrected and corrected chloride concentration series are presented in Figure 30. The two covariances are very similar as are the estimates of the correlation scale. The estimates of the spectrum are shown in Figure 31 for the uncorrected and corrected series.

Grain size parameters-- Various methods have been proposed over the years that predict the hydraulic conductivity from different combination of grain size parameters. Based on experimental comparisons Krumbein and Monk (1943) developed the following formula

$$k = 760 \, d^2 \, e^{-1.31 \, \sigma\phi}$$

where k = permeability in darcys d, = geometric mean grain diameter (mm), and $\sigma\phi$ = log standard deviation of the grain size distribution. The units of permeability (darcys) are converted to hydraulic conductivity (meters/day) by changing the constant from 760 to 634. Then

$$K = 634 \, d^2 \, e^{-1.31 \, \sigma\phi}$$

where K = hydraulic conductivity (meters/days).

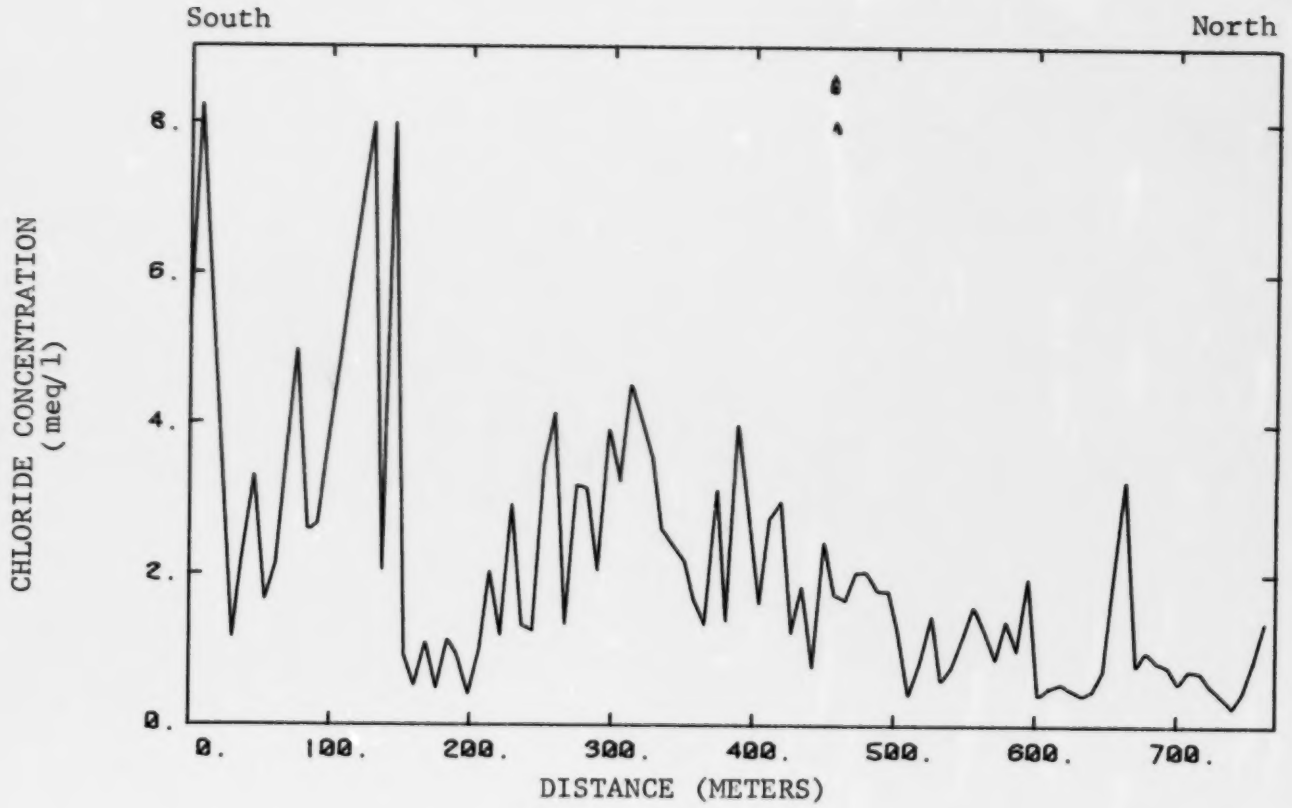

Figure 29a. Chloride concentration of soil extract samples from the capillary fringe on the north-south transect.

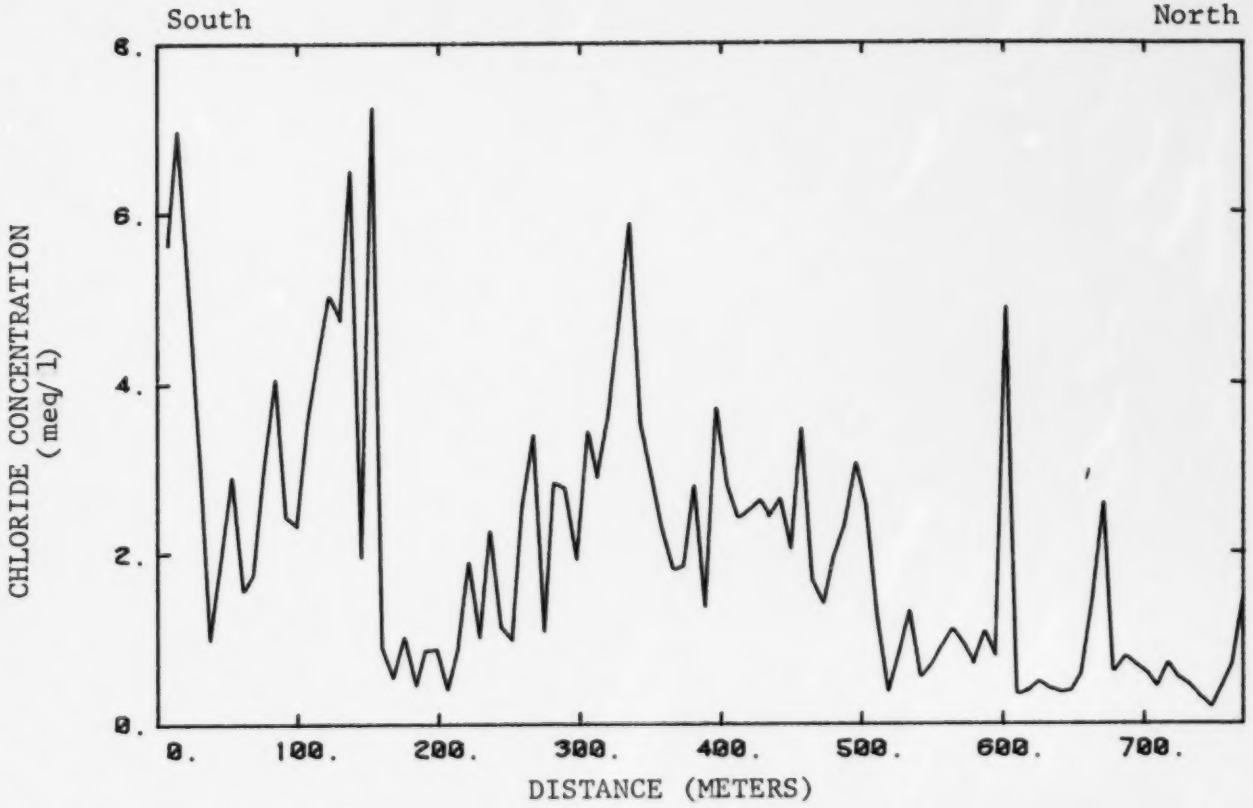

Figure 29b. Chloride concentration, corrected for percent water, in the capillary fringe on the north-south transect.

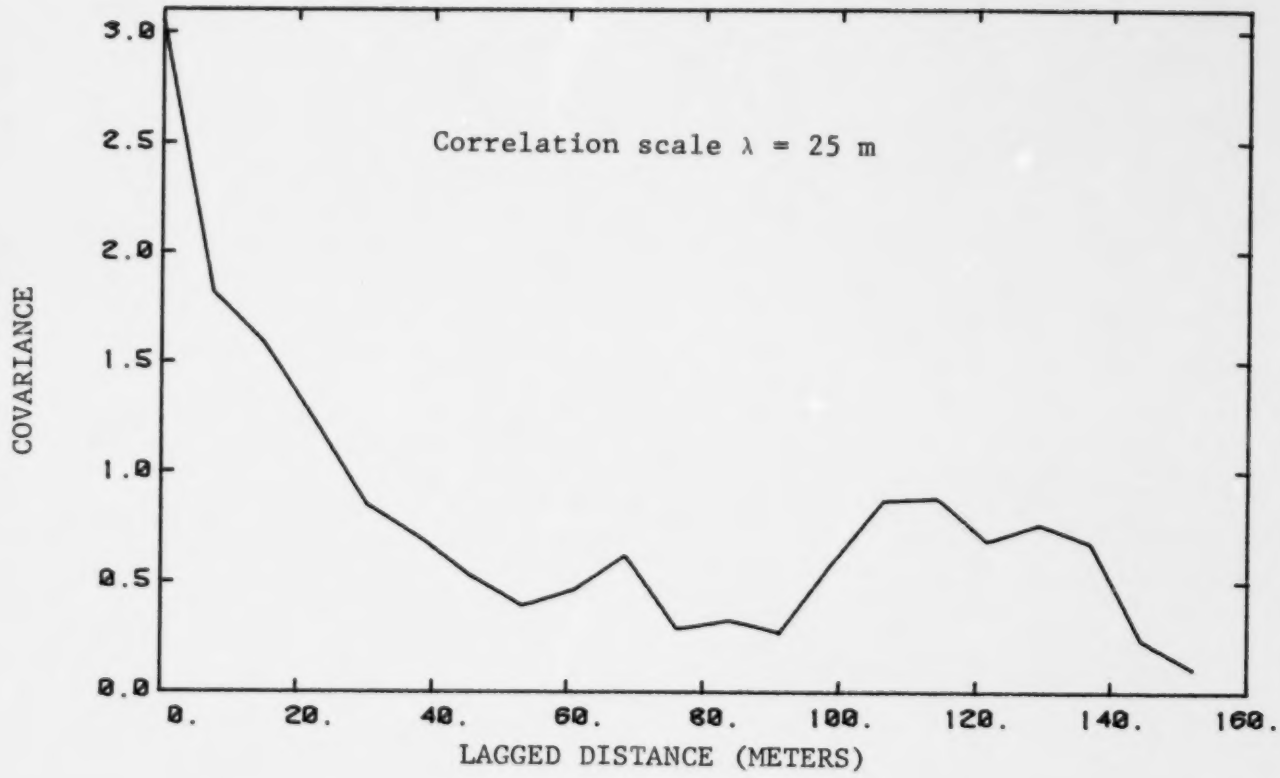

Figure 30a. Covariance estimate of the chloride concentration of the capillary fringe on the north-south transect.

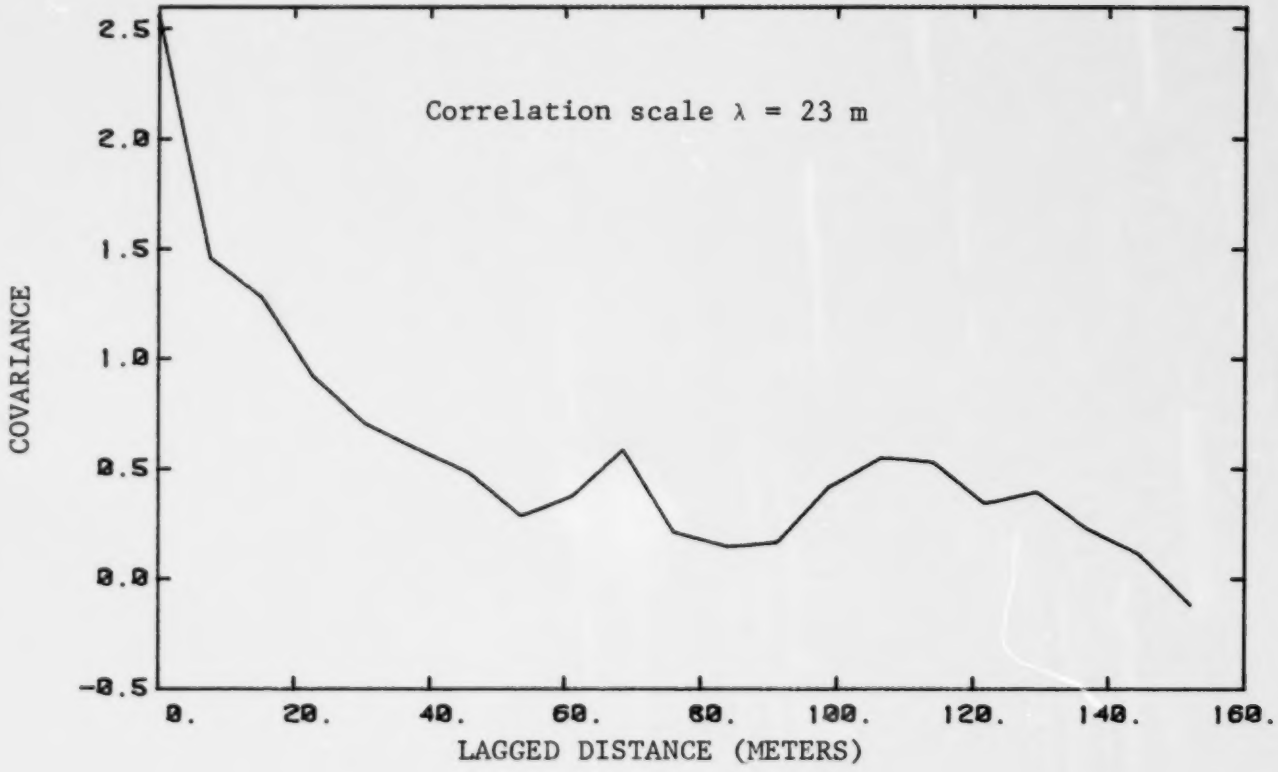

Figure 30b. Covariance estimate of the chloride concentration of the capillary fringe corrected for percent water, on the north-south transect.

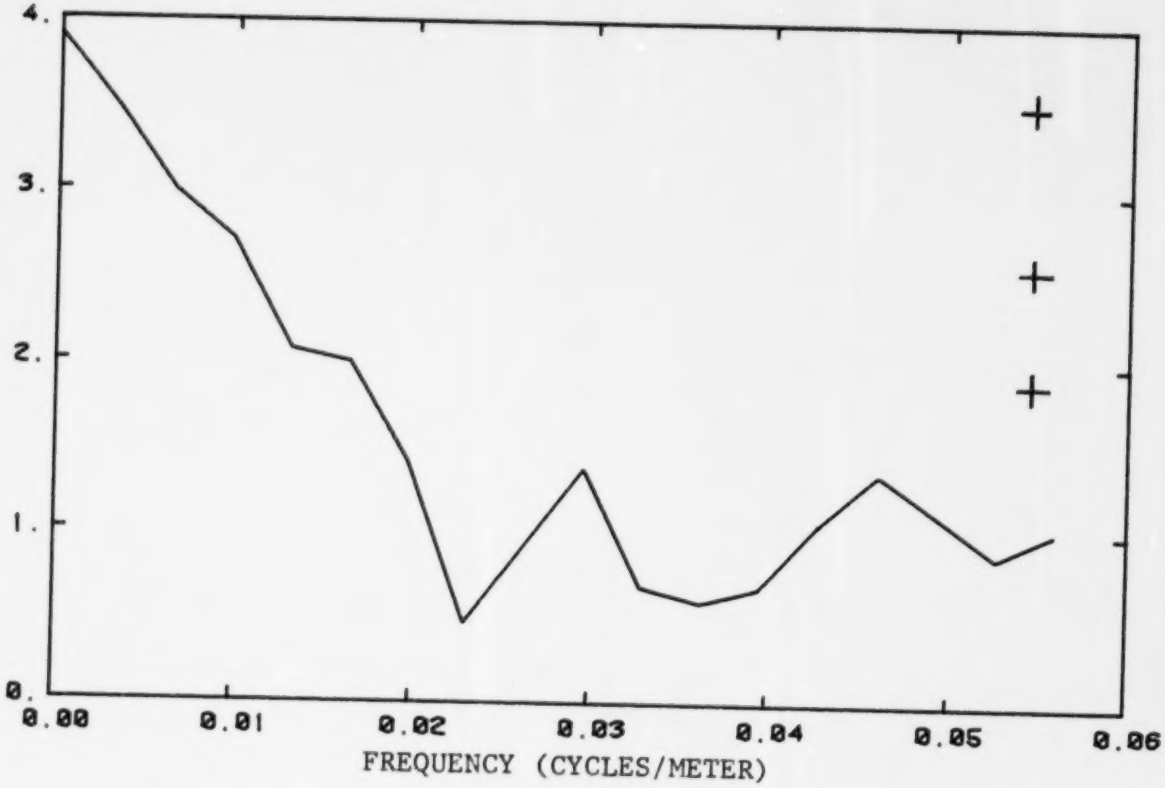

Figure 31a. Spectral estimate of the chloride concentration in the capillary fringe on the north-south transect; the + are 95% confidence intervals.

Figure 31b. Spectral estimate of the chloride concentration in the capillary fringe corrected for percent water, on the north-south transect; the + indicates the 95% confidence intervals.

Taking the natural logarithm of both sides of the equation yields

$$\ln K = 6.45 + 2 \text{ end} - 1.31\ \sigma\phi \qquad (6)$$

which can be used to estimate the space series of ln K from the grain size analysis parameters. The spaces series of d and $\sigma\phi$ are presented in Figure 32. The two series are somewhat inversely related in that samples with a small geometric mean grain size tend to have a large log standard deviation. The predicted ln K series is shown in Figure 33. In general, the predicted ln K series closely resembles that of the geometric mean grain size. The standard deviation of the predicted ln K is 1.47, which is somewhat higher than the measured standard deviation of 1.01 for the natural log of the infiltration rate from the surface soil infiltration experiment.

Shallow Groundwater--

At a later time, but at the same locations as the soil samples, holes were augered to the water table. Samples of the shallow groundwater were taken and analyzed for electrical conductivity, chloride concentration and nutrients. The nutrient series have already been presented in Section 3, MONITORING.

The series of EC and Cl are given in Figure 34. High chloride concentrations were observed in samples from locations near the drains (Figure 34a). The high chloride concentrations near the drains may be the result of deeper, more saline groundwater discharging into the drains. The electrical conductivity in Figure 34b also displays significant variations. Similar to chloride concentrations, high values of EC were also found in the middle of the field. The spectral-covariance for the EC and chloride series estimates are presented in Figures 35 and 36.

Vertical Boreholes

Data were collected from 3 of the boreholes drilled on the farm and analyzed for spatial variability. The three holes (Figure 1), S2 (at DW54), S3, and S4 (at DW63) are located on the middle drain near well 5, south of the farm near well 33, and on the main drain near well 13, respectively.

Middle Drain - S2--

This hole was augered to a depth of 21.9 meters using a truck mounted auger drill rig. Soil samples were removed from the auger flights at approximately 0.30 meter (1 foot) increments. No more than 3 meters (10 feet) were augered into new material before all the auger was removed and samples collected.

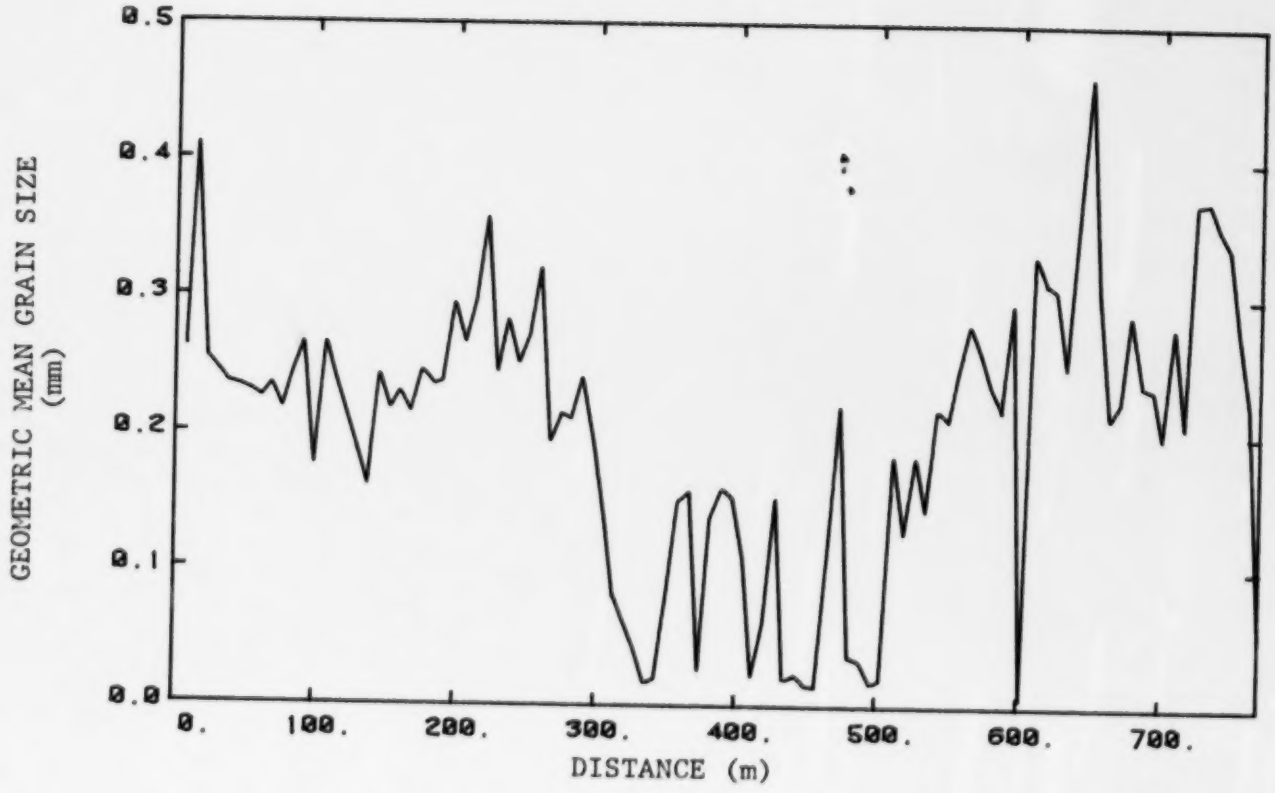

Figure 32a. Geometric mean grain size in the capillary fringe on the north-south transect.

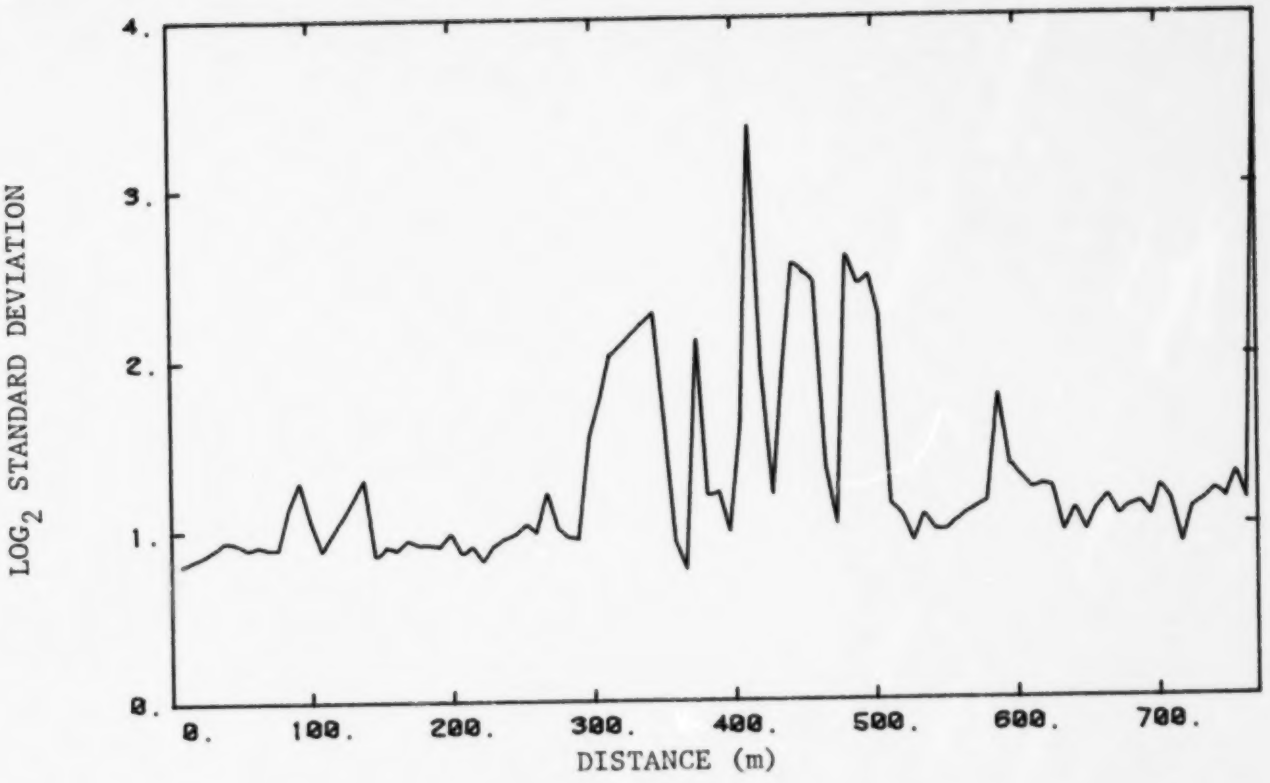

Figure 32b. Log_2 standard deviation of the capillary fringe soil samples on the north-south transect.

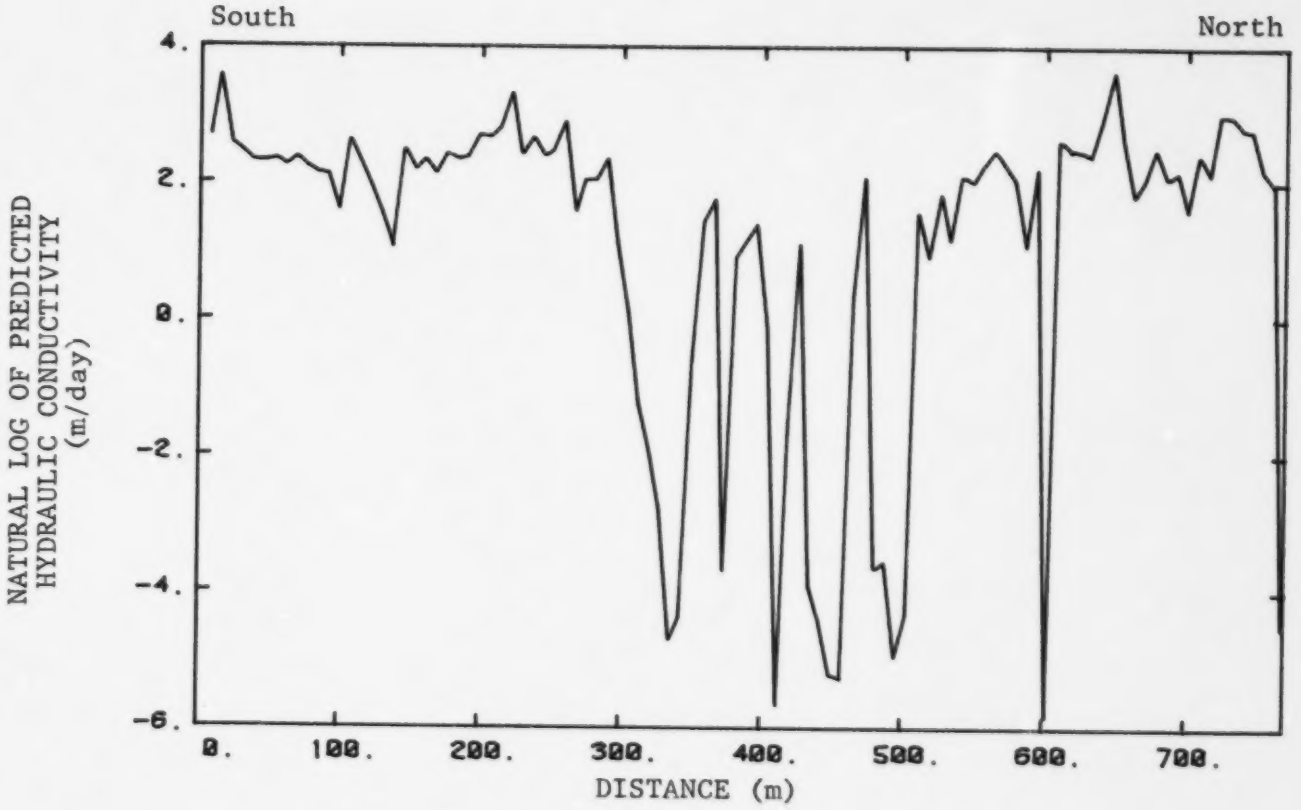

Figure 33. Natural log of the predicted hydraulic conductivity in the capillary fringe on the north-south transect.

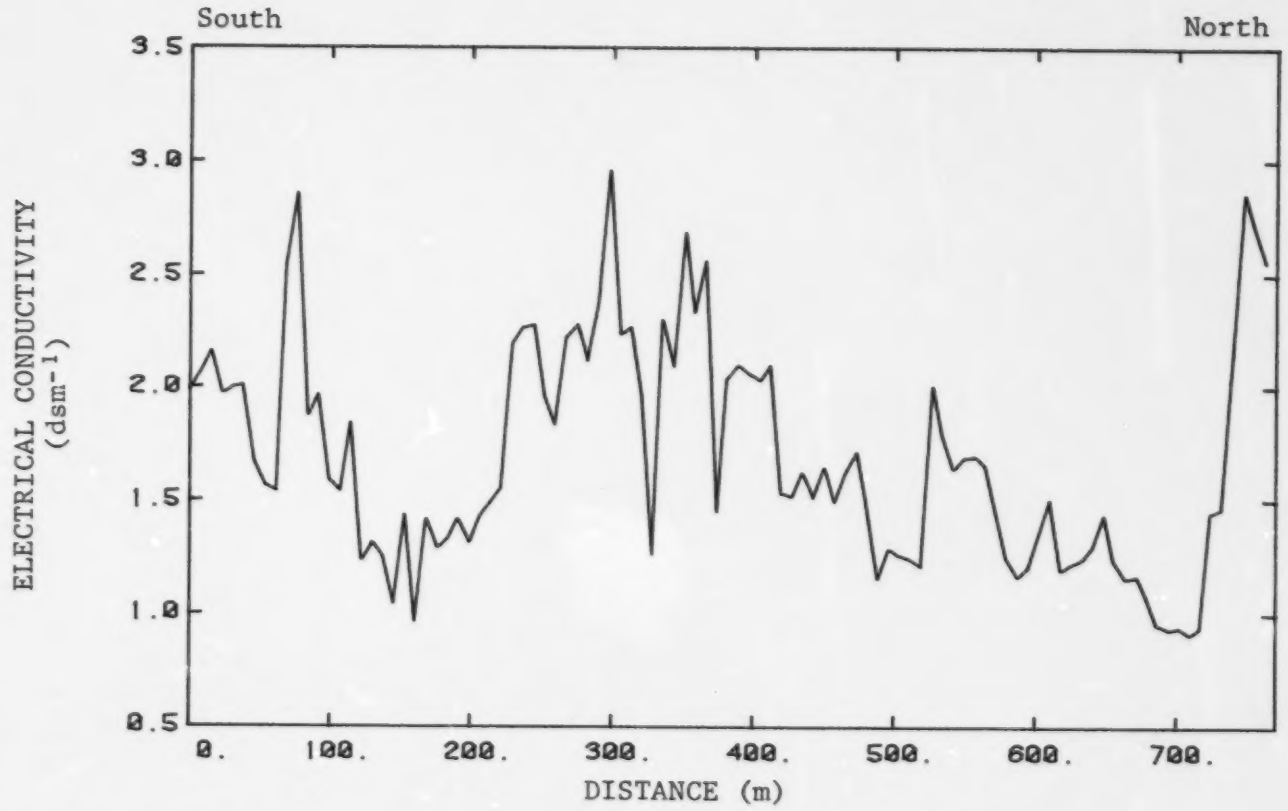

Figure 34a. Electrical conductivity of the shallow groundwater on the north-south transect.

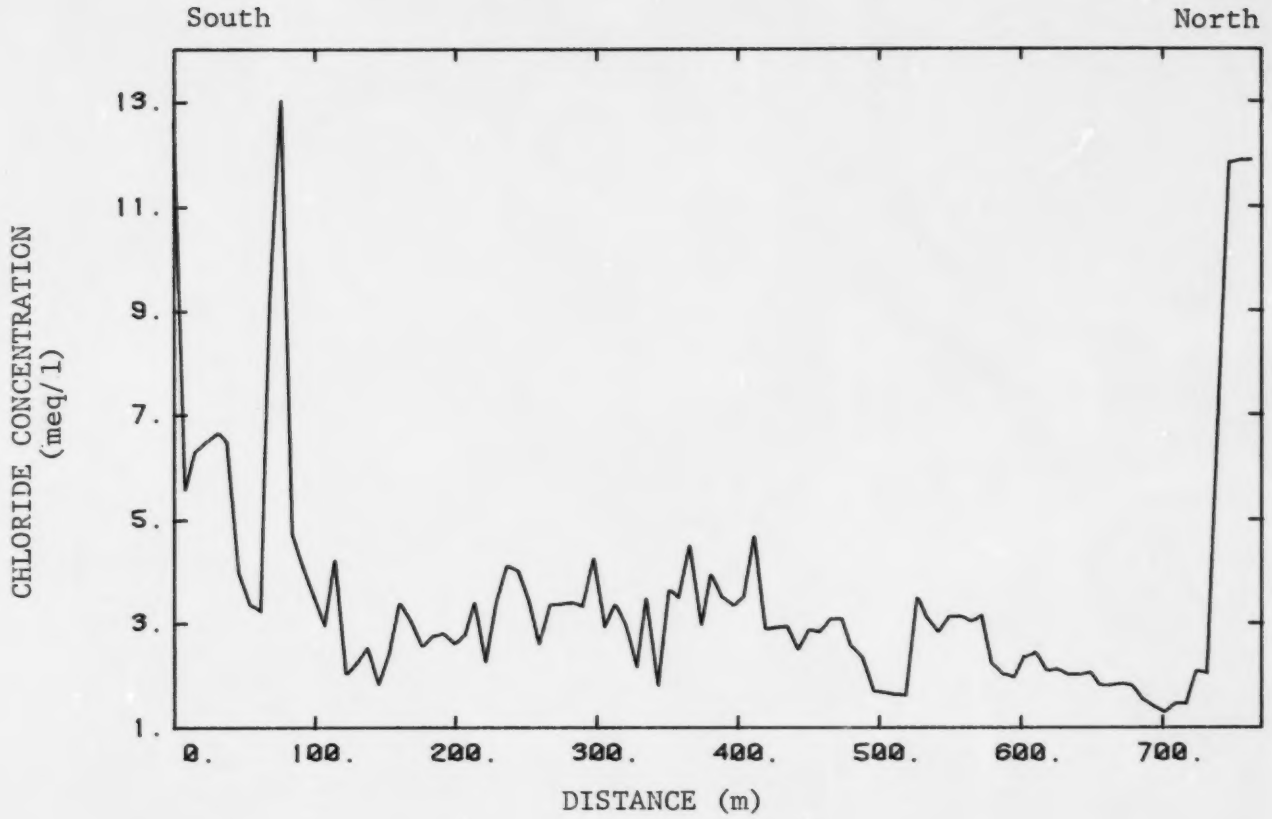

Figure 34b. Chloride concentration of the shallow groundwater on the north-south transect.

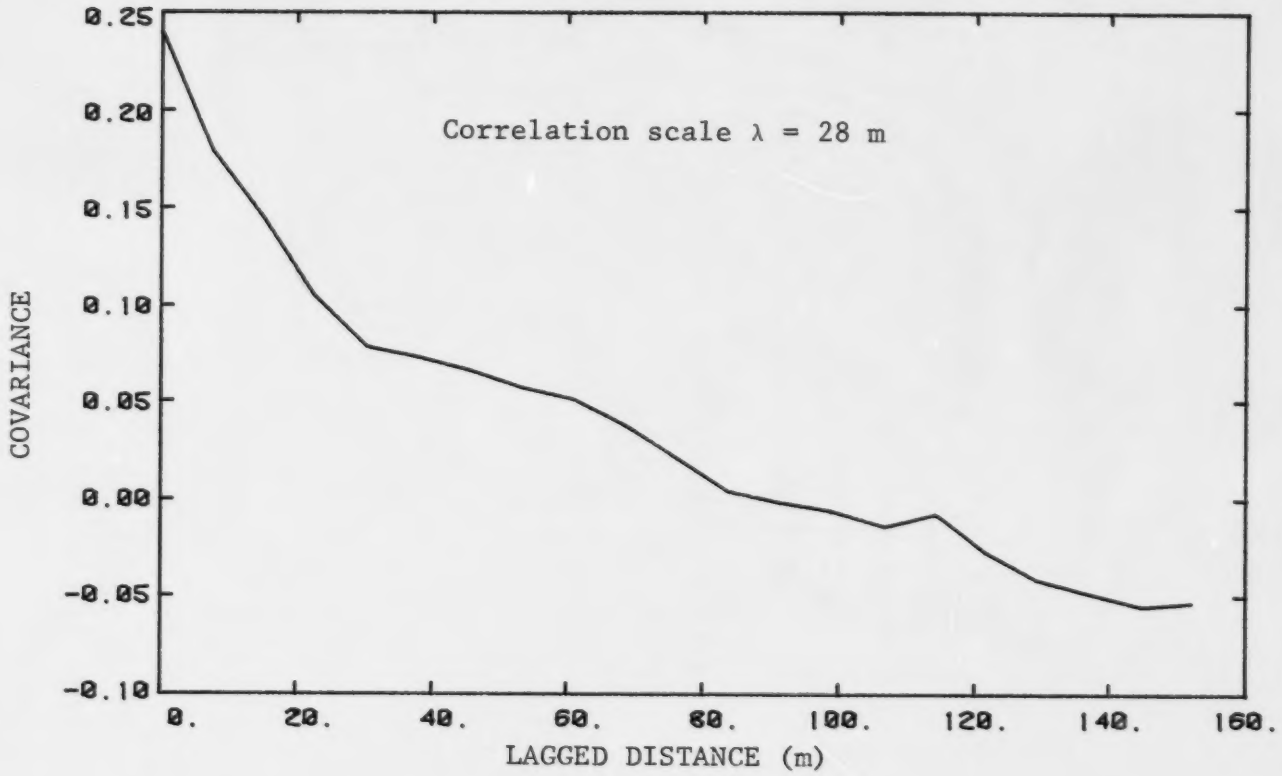

Figure 35a. Covariance estimate of electrical conductivity of the shallow groundwater on the north-south transect.

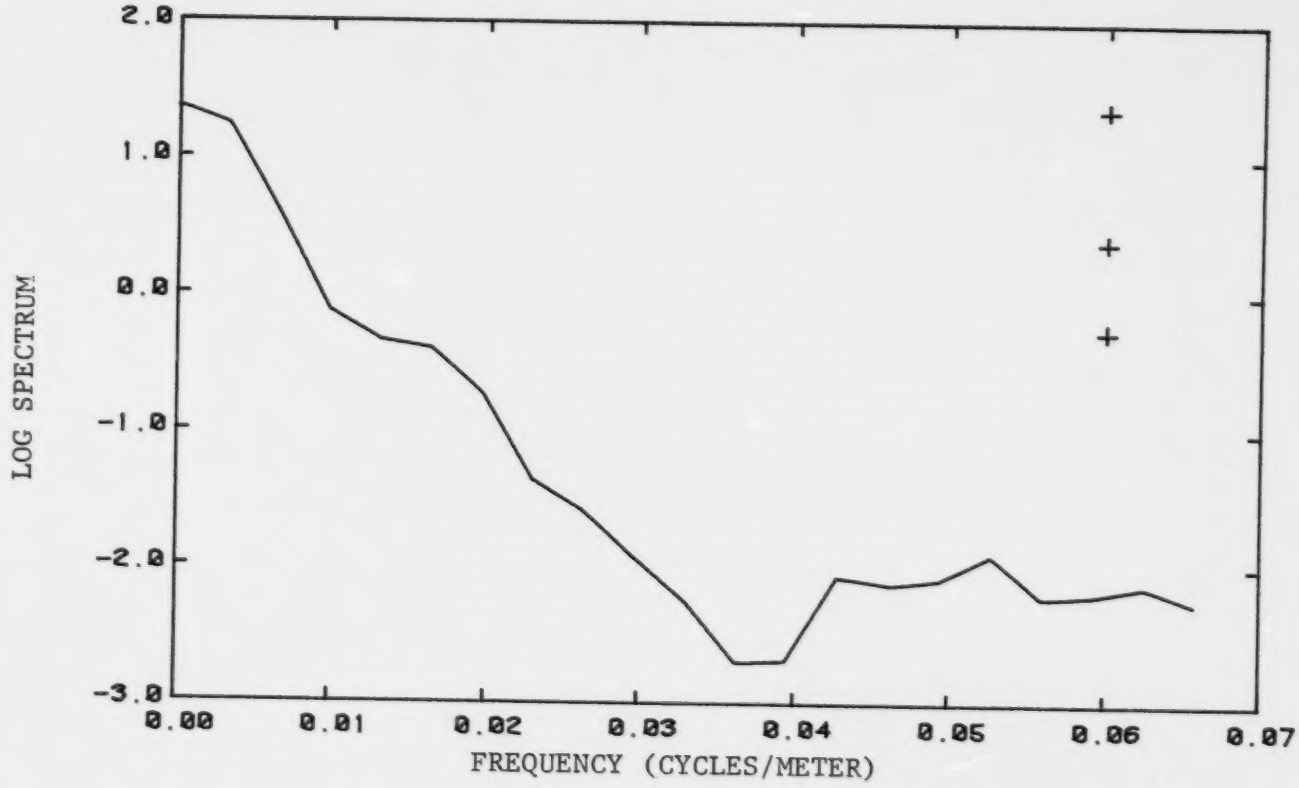

Figure 35b. Spectral estimate of the electrical conductivity of the shallow groundwater on the north-south transect; the + are 95% confidence intervals.

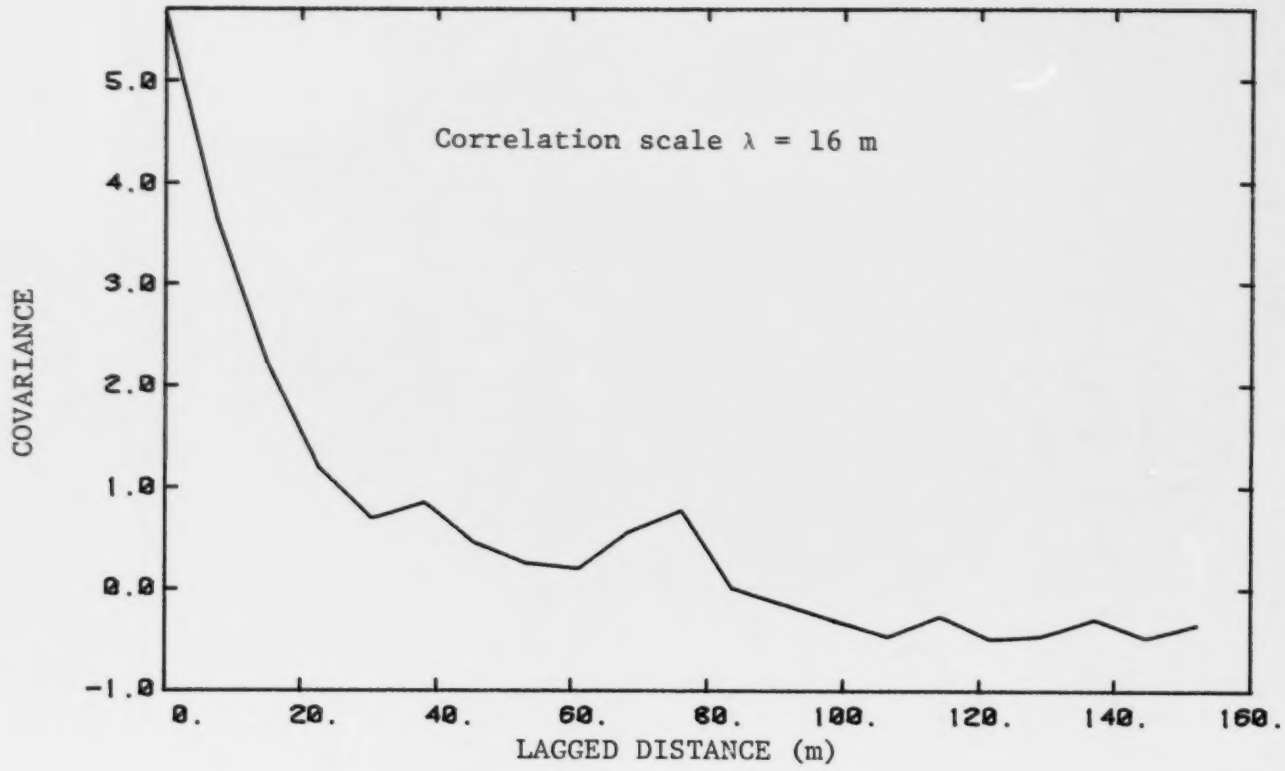

Figure 36a. Covariance estimate of the chloride concentration of the shallow groundwater on the north-south transect.

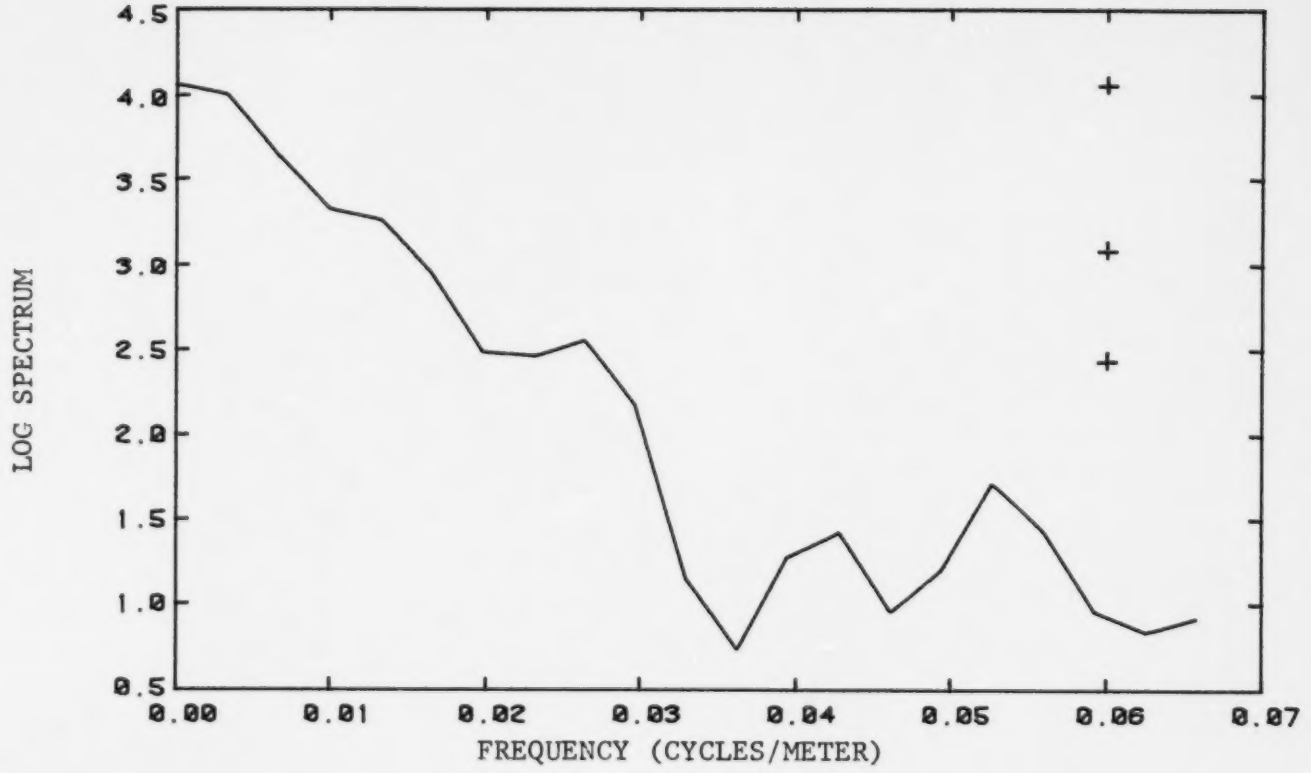

Figure 36b. Spectral estimate of the chloride concentration of the shallow groundwater on the north-south transect; the + are 95% confidence intervals.

Soil-water extract analysis was performed in order to determine the variation of electrical conductivity and chloride concentration with depth. The results of these analyses were presented by Gelhar and others (1980) will not be repeated here.

South of the Farm - S3--

Hole S3 was augered to a depth of 27.4 meters. The samples were collected in the same manner as for borehole S2. In addition to soil water extract analyses for electrical conductivity and chloride concentration, soil samples were analyzed for the grain size parameters as was described for the capillary fringe of the north-south transect.

Electrical conductivity--The space series, covariance estimate, and spectral estimate are presented in Figure 37. One will notice that this correlation scale is much smaller than the estimates for the horizontal transect data.

Chloride concentration--In this case the correction for percent water, as used with the capillary fringe data, was also considered; a bulk density of 1.6 g/cm^3 and a porosity of 0.38 were assumed. From Figure 38, one can see that the two series are quite different. The covariance and spectral estimates for the uncorrected and corrected data are shown in Figures 39 and 40. Again, as was the case for the capillary fringe data (Figure 30 and 31) the spectral and covariance estimates have a similar shape. Also note that the correlation scales are similar. Unlike the capillary fringe data, however, the magnitudes of the covariance and spectral estimates differ by a significant amount.

Grain size parameters--The depth series of the geometric mean grain size (Figure 41a) and of the log standard deviation (Figure 41d) were used to estimate the natural log hydraulic conductivity series using equation (6) (Figure 41c).

The grain size data (Figure 41a) show distinctly the two thin clay beds which were recognized in the well log (Figure 19). The statistical nonhomogeneity reflected in these clay zones makes covariance and spectral estimates less meaningful. One covariance estimate for the grain size is included (Figure 41d); this again indicates a relatively small correlation scale in the vertical.

Main Drain - S4--

This borehole was augered to a depth of 30.5 meters, next to the main drain, near well 13. The same sampling and analysis procedures were used as for borehole S3 except that the soil water extract analysis data were not corrected for percent water.

Electrical conductivity--The electrical conductivity series of borehole S4 (Figure 42a) does not show a pronounced large

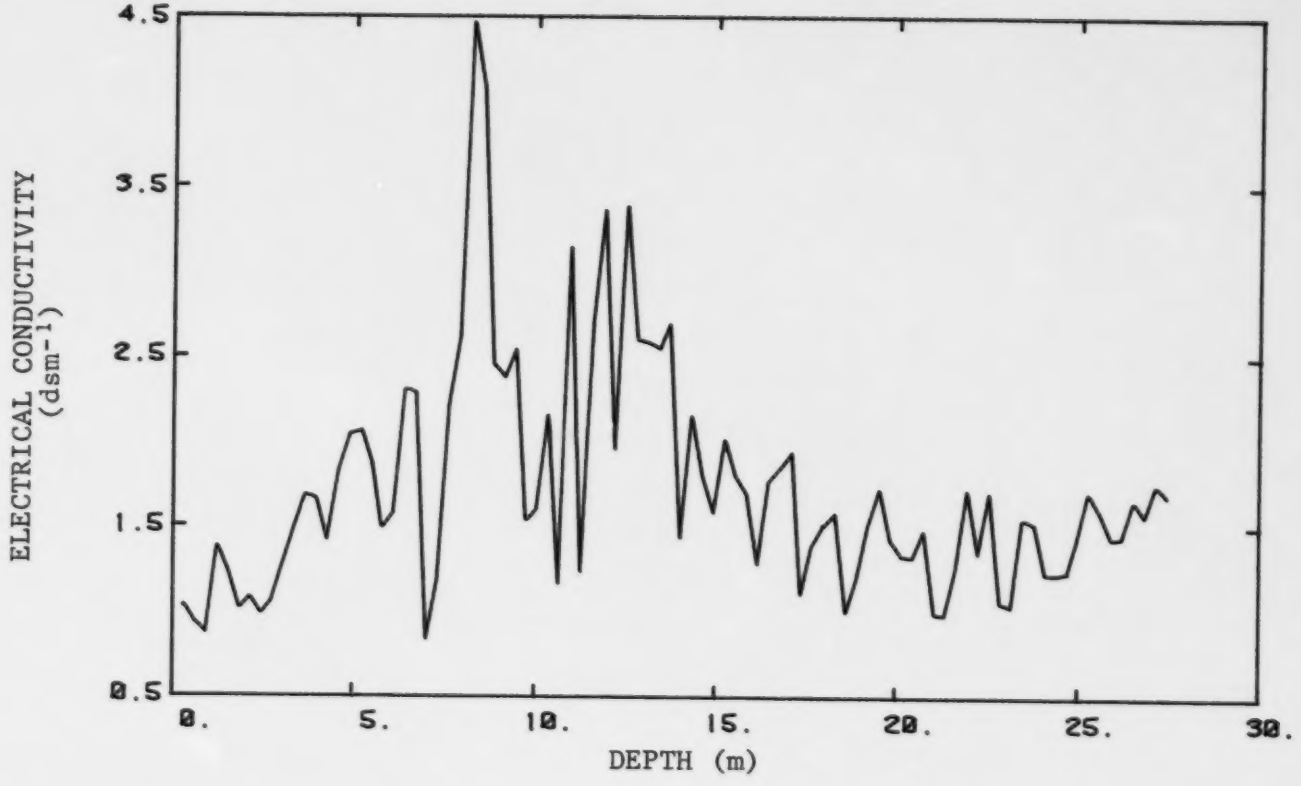

Figure 37a. Electrical conductivity of soil extract samples at borehole S3, near well 33.

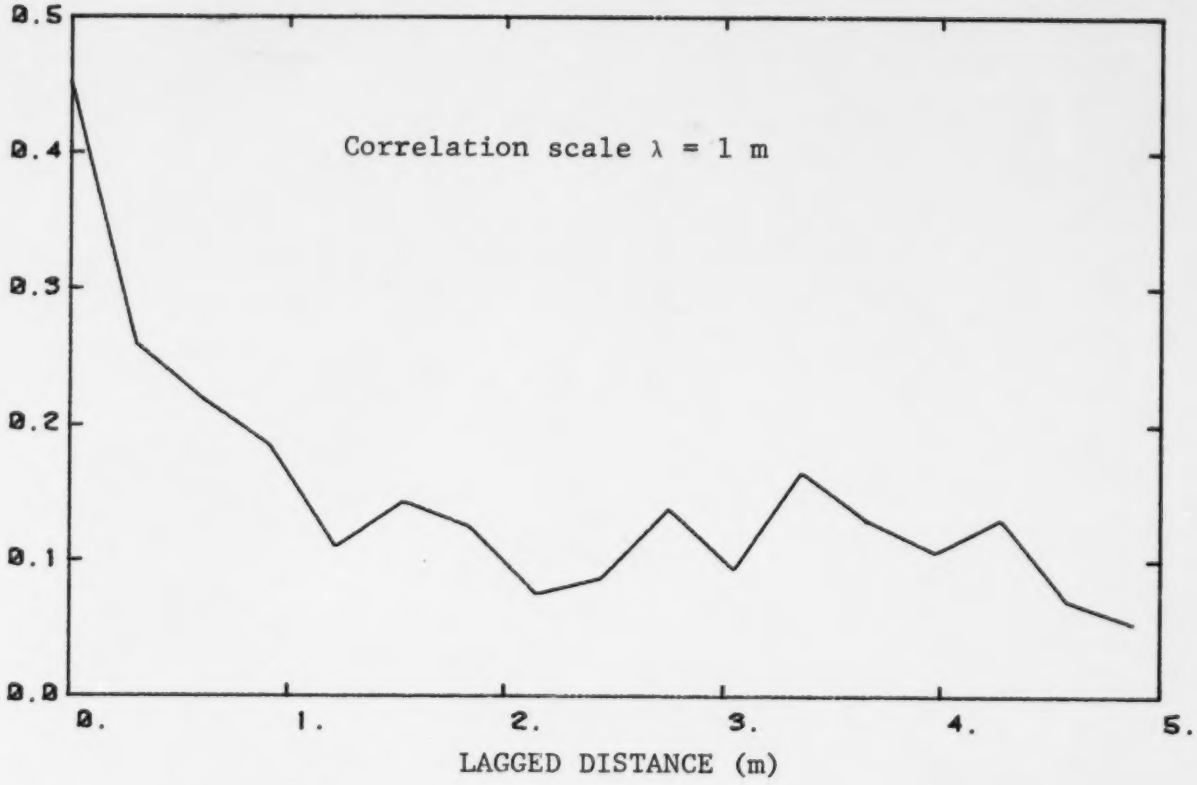

Figure 37b. Covariance estimate of electrical conductivity of borehole S3.

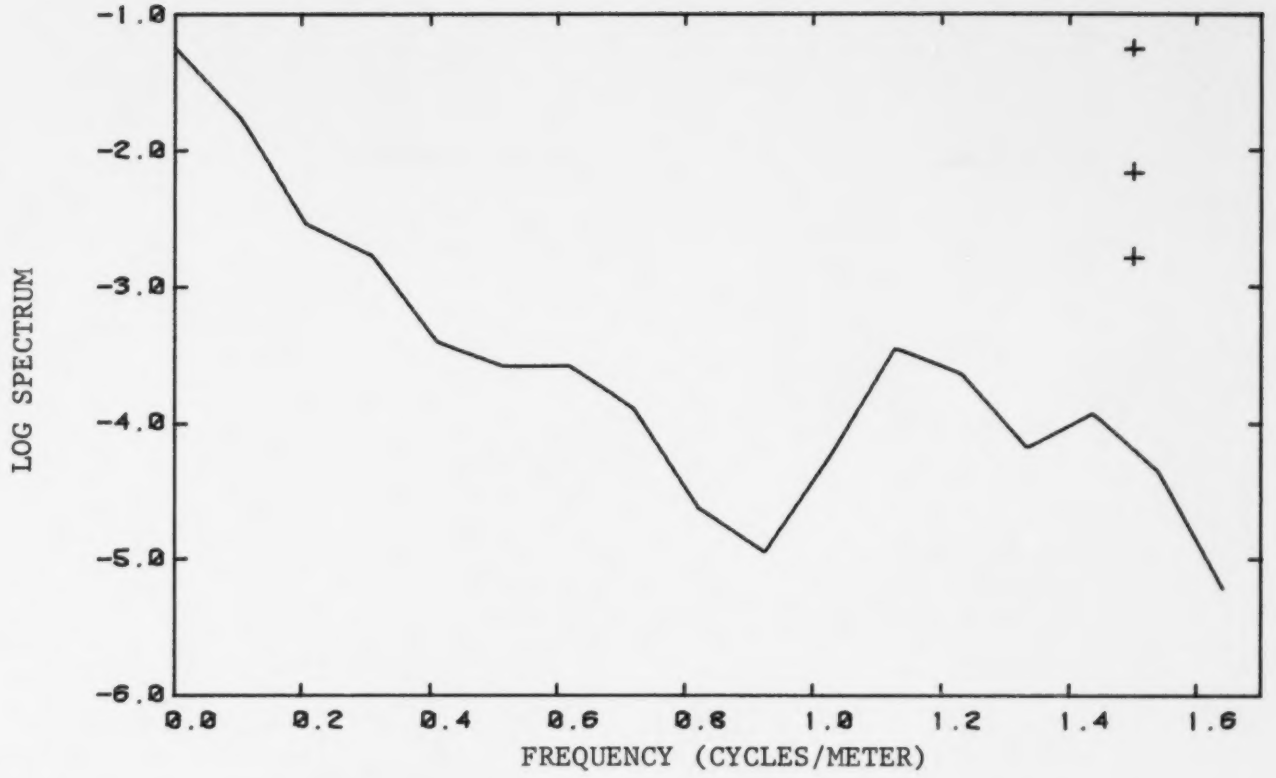

Figure 37c. Spectral estimate of electrical conductivity of borehole S3; the + are 95% confidence intervals.

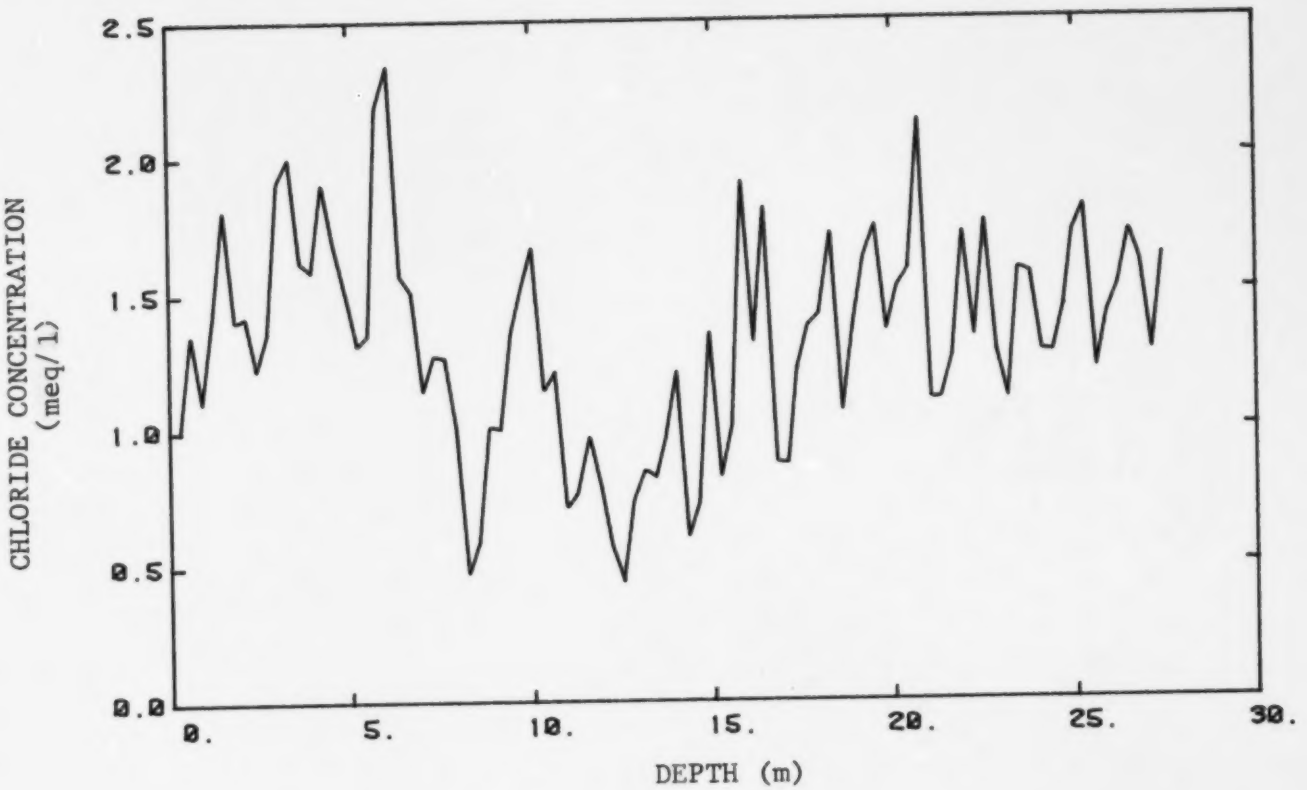

Figure 38a. Chloride concentration of soil extract samples for well S3.

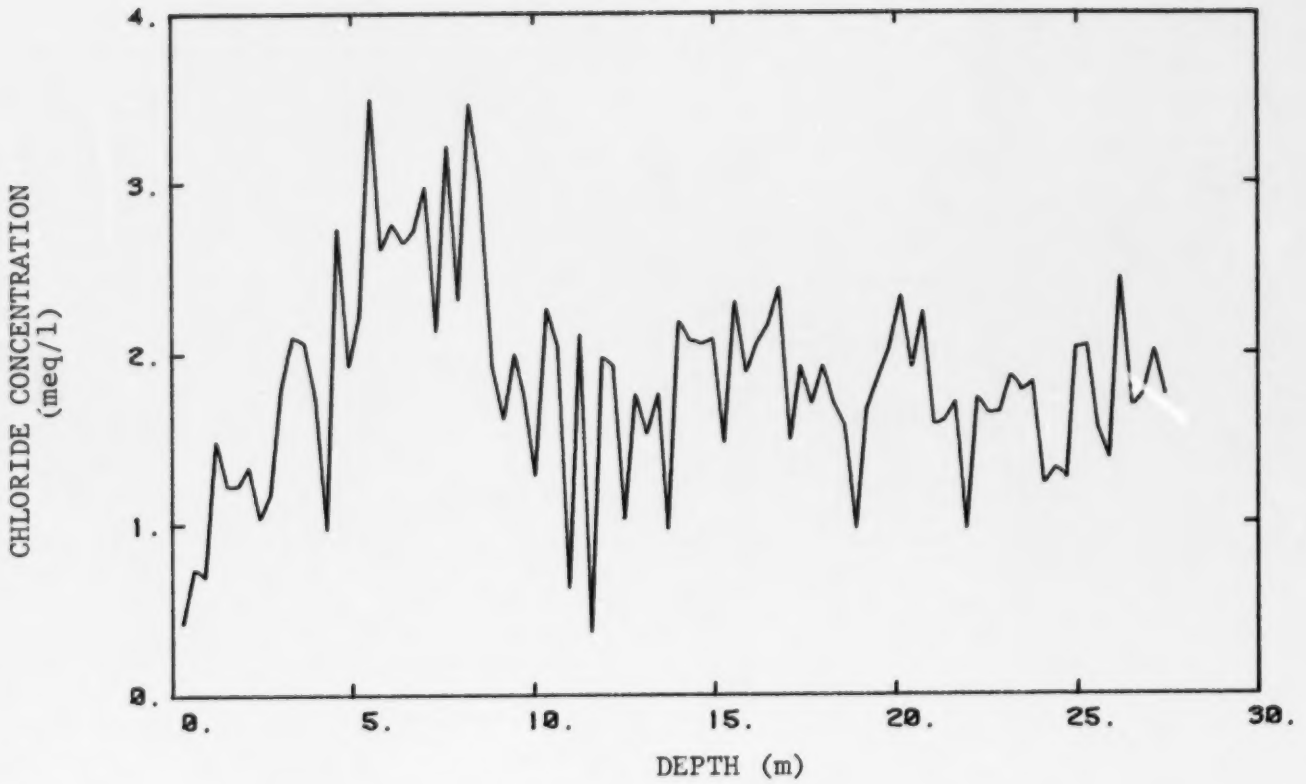

Figure 38b. Chloride concentration, corrected for percent water, for well S3.

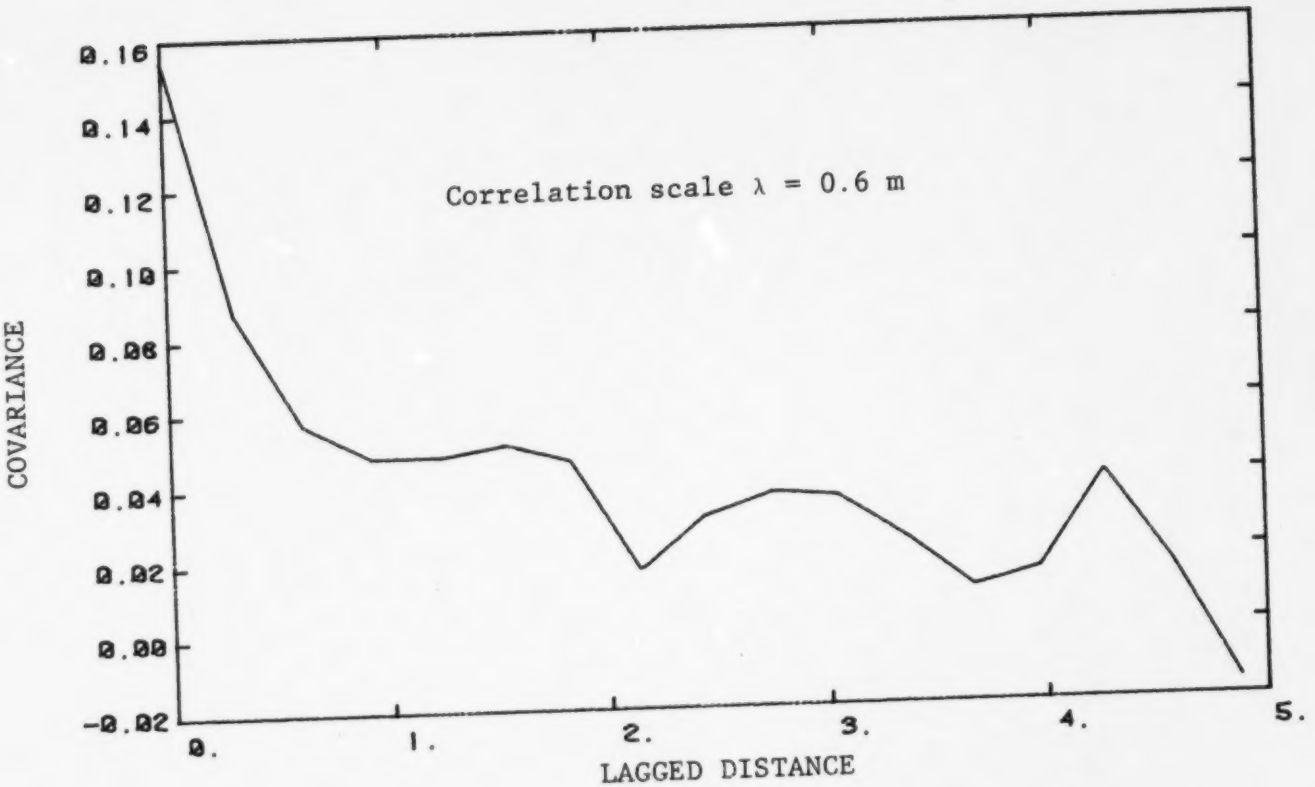

Figure 39a. Covariance estimate for chloride concentration for borehole S3.

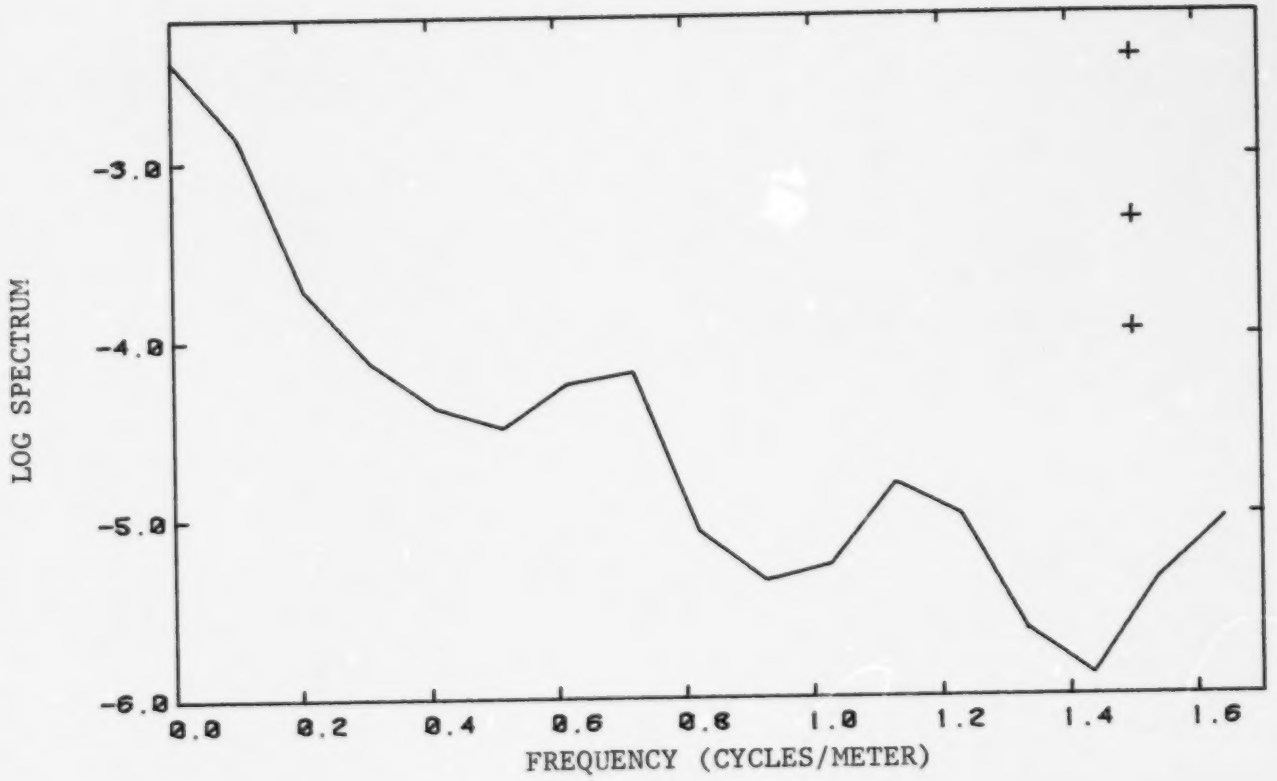

Figure 39b. Spectral estimate of chloride concentration for borehole S3; the + are 95% confidence intervals.

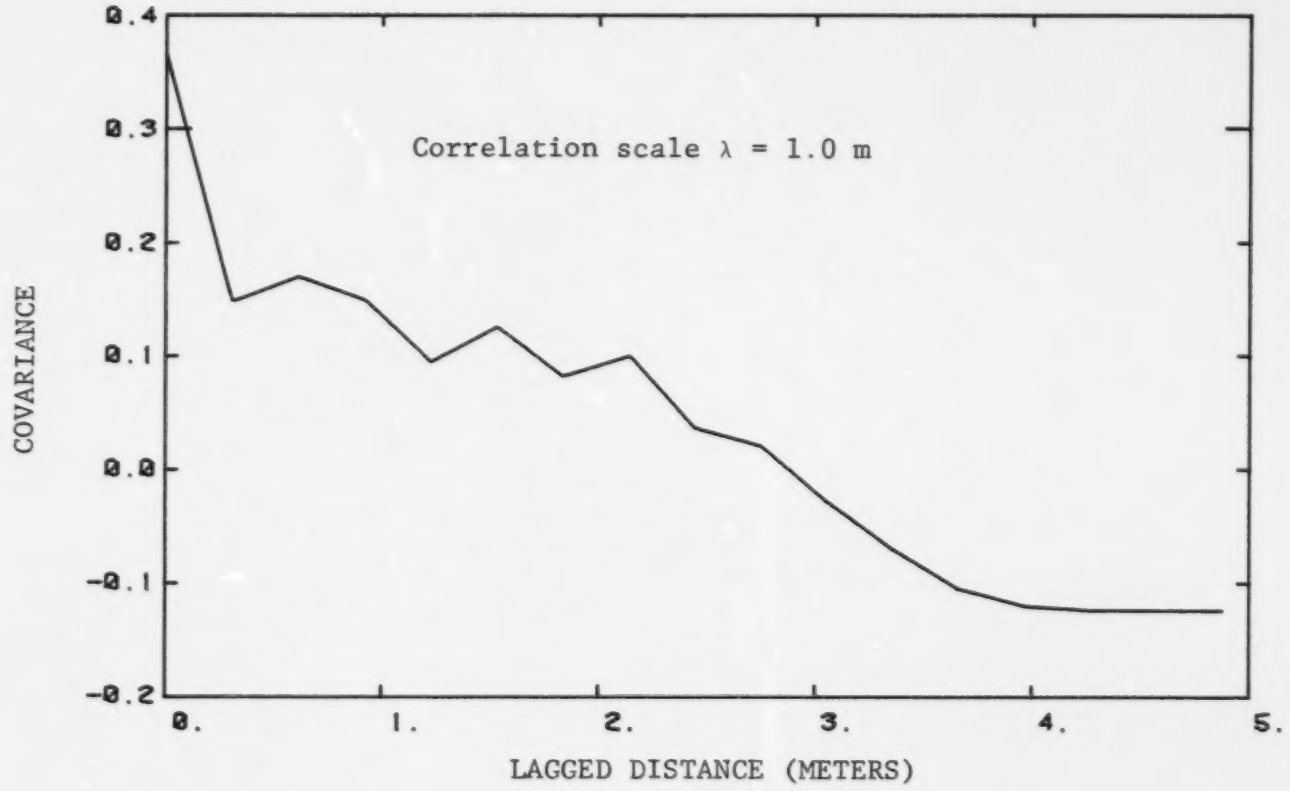

Figure 40a. Covariance estimate for the chloride concentration, corrected for percent water, in borehole S3.

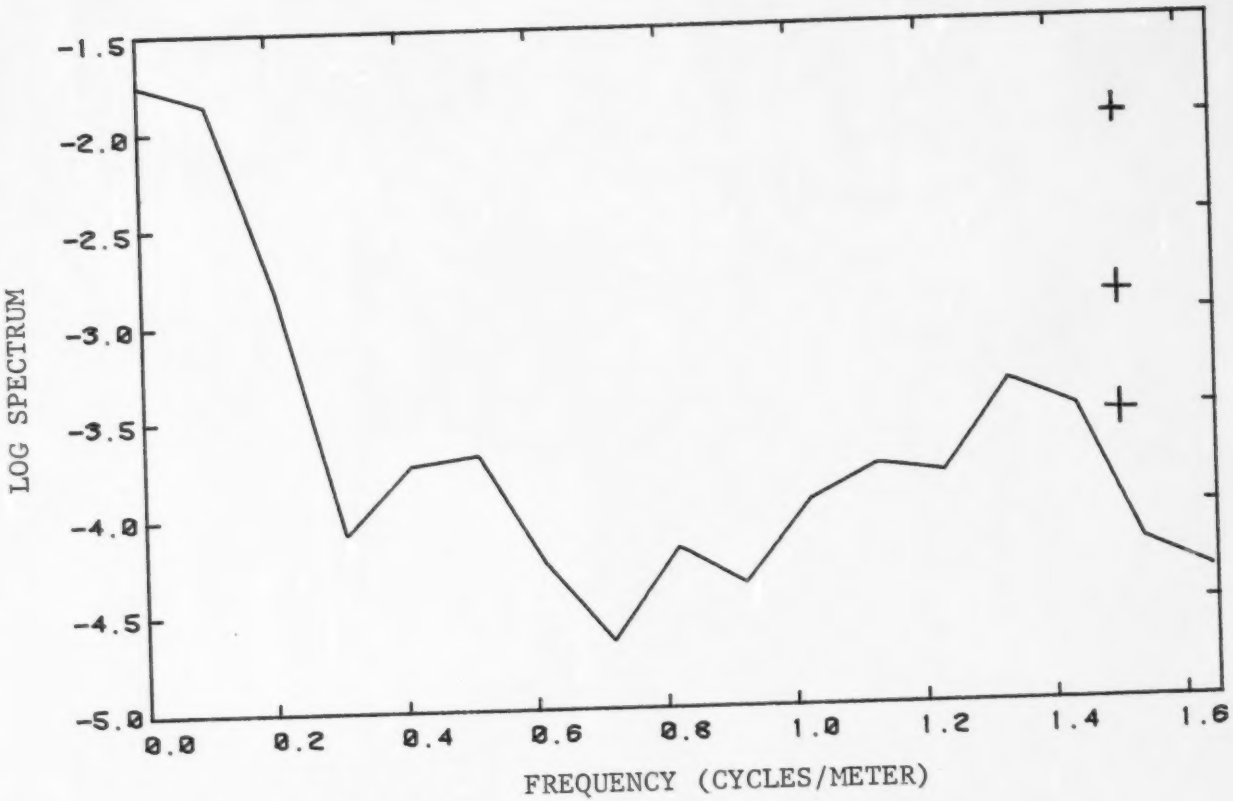

Figure 40b. Spectral estimate of the choloride concentration corrected for percent water in borehole S3; the + are 95% confidence intervals.

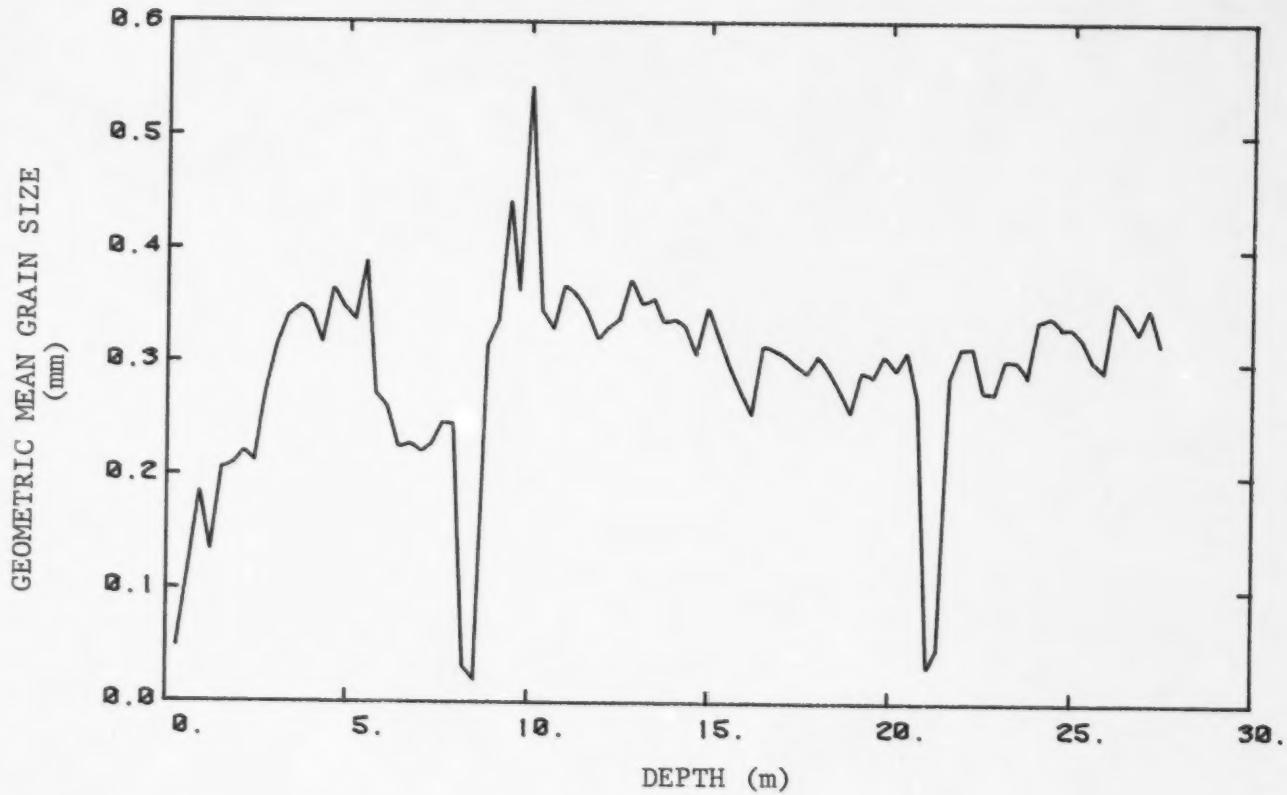

Figure 41a. Geometric mean grain size of borehole S3.

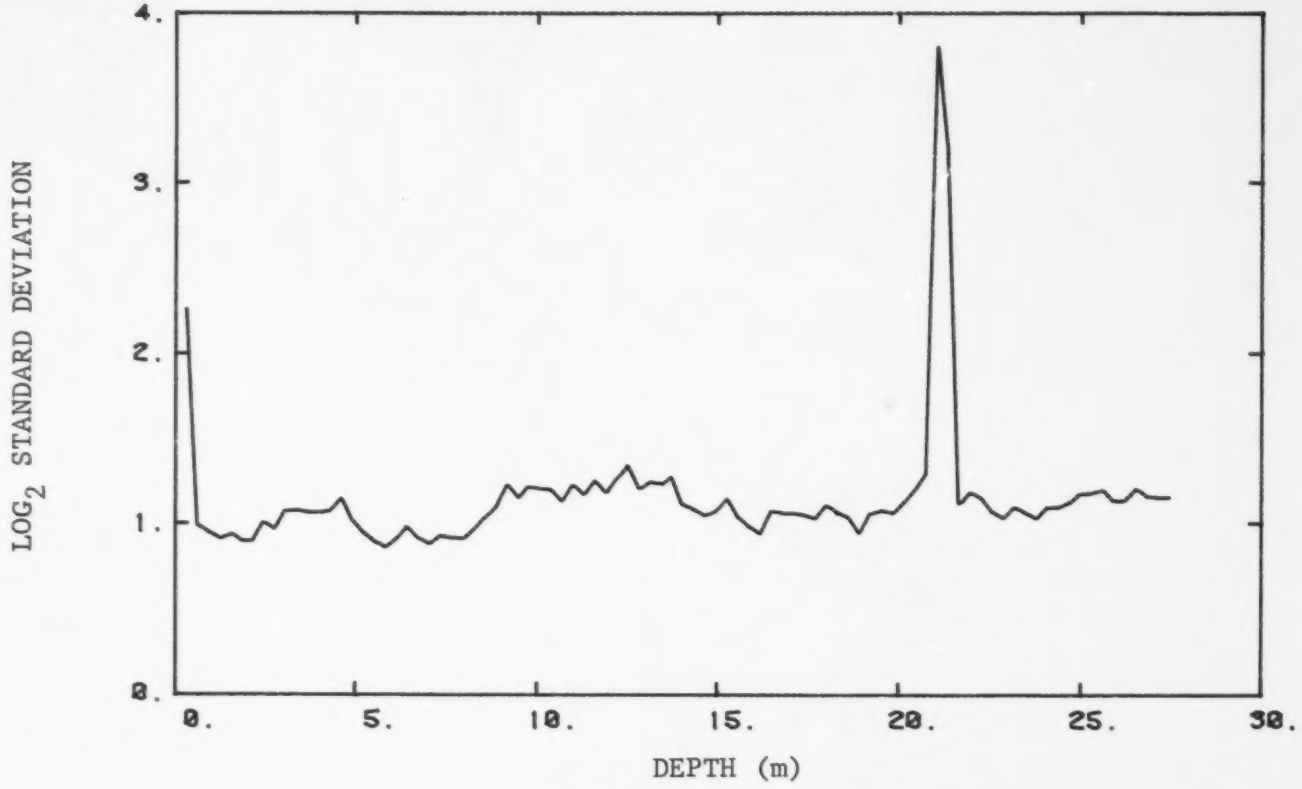

Figure 41b. Log_2 standard deviation of the grain size distribution for borehole S3.

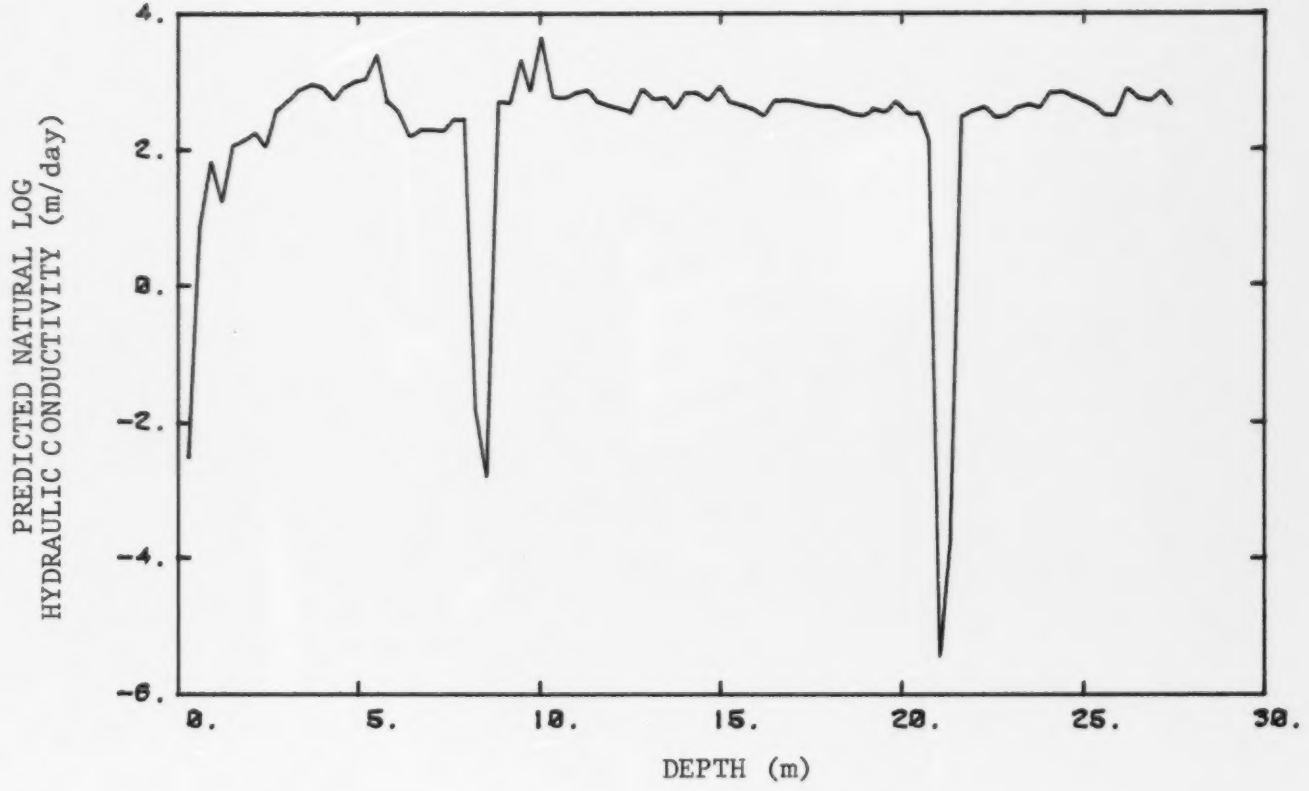

Figure 41c. Predicted natural log hydraulic conductivity (m/day) for borehole S3.

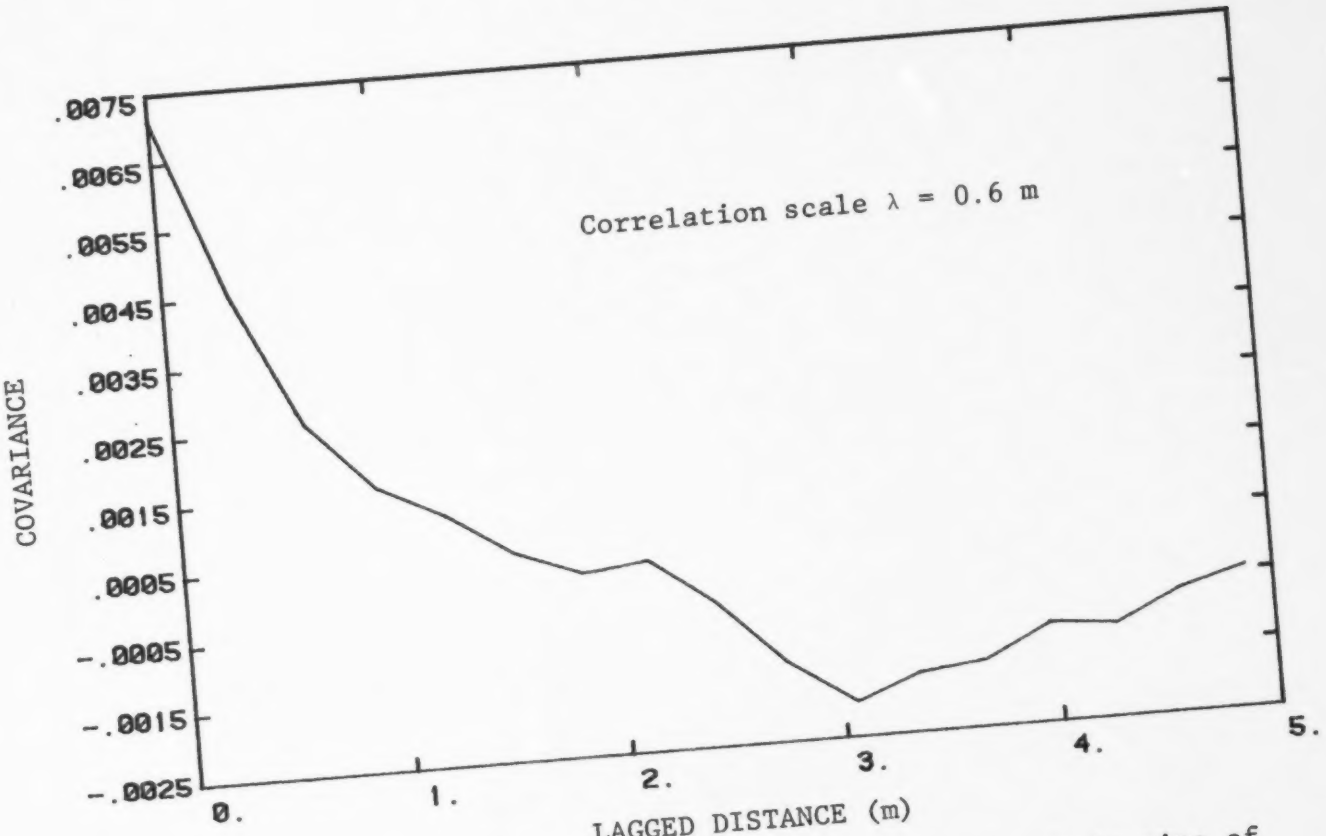

Figure 41d. Covariance estimate of the geometric mean grain size of borehole S3.

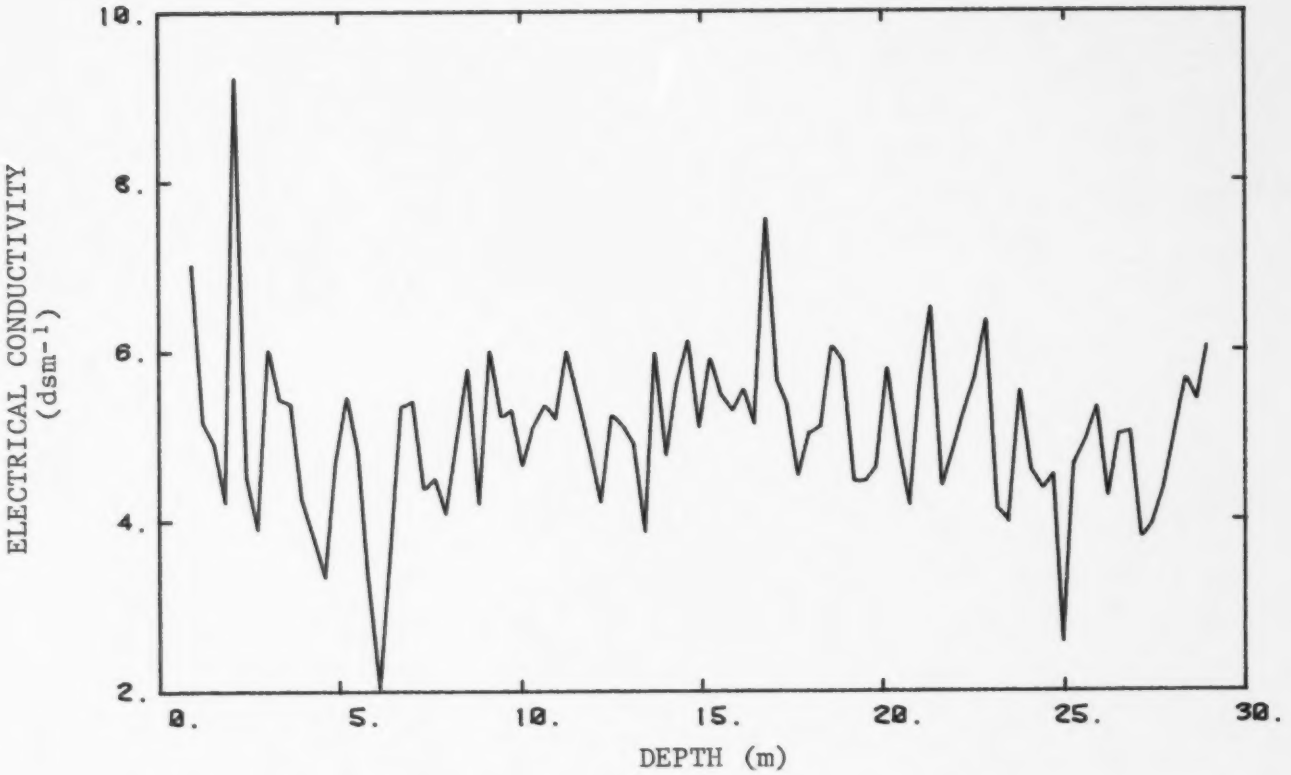

Figure 42a. Electrical conductivity of soil extract samples at borehole S4.

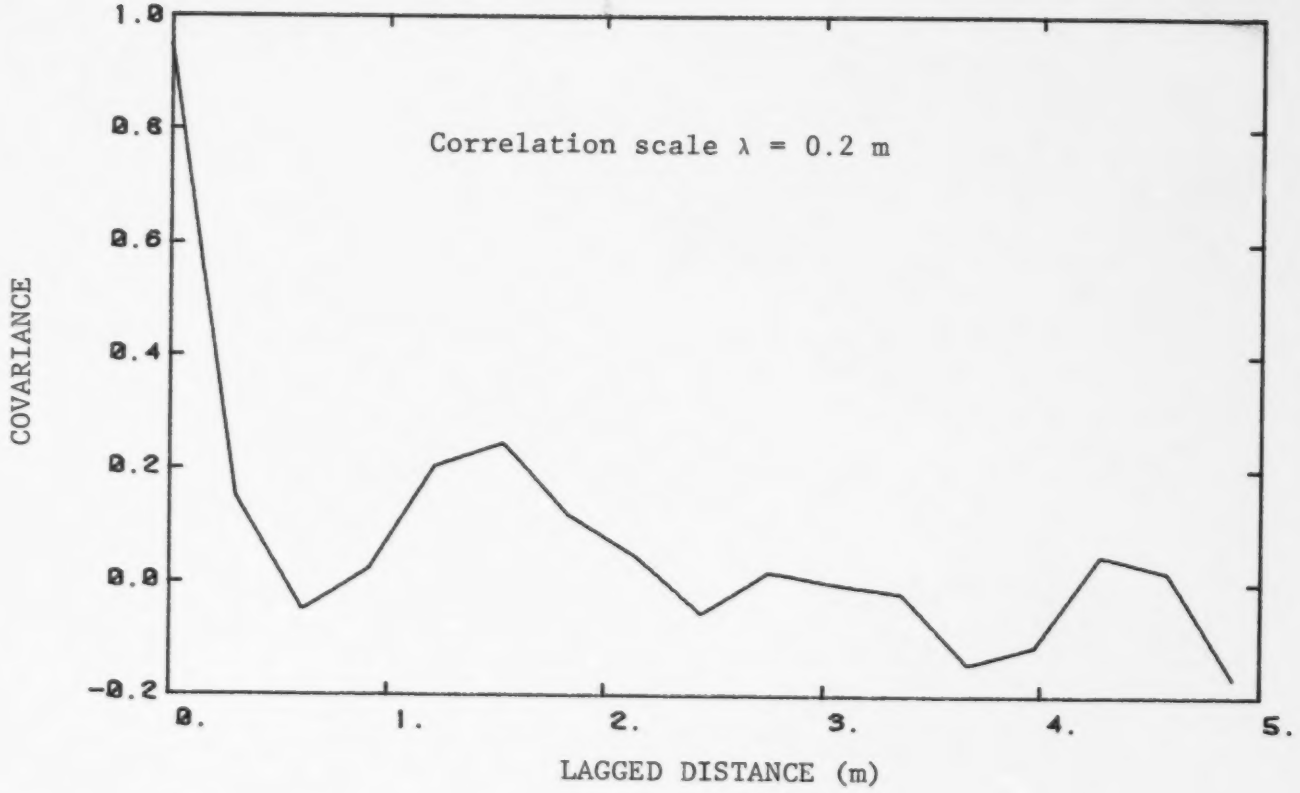

Figure 42b. Covariance estimate of electrical conductivity of borehole S4.

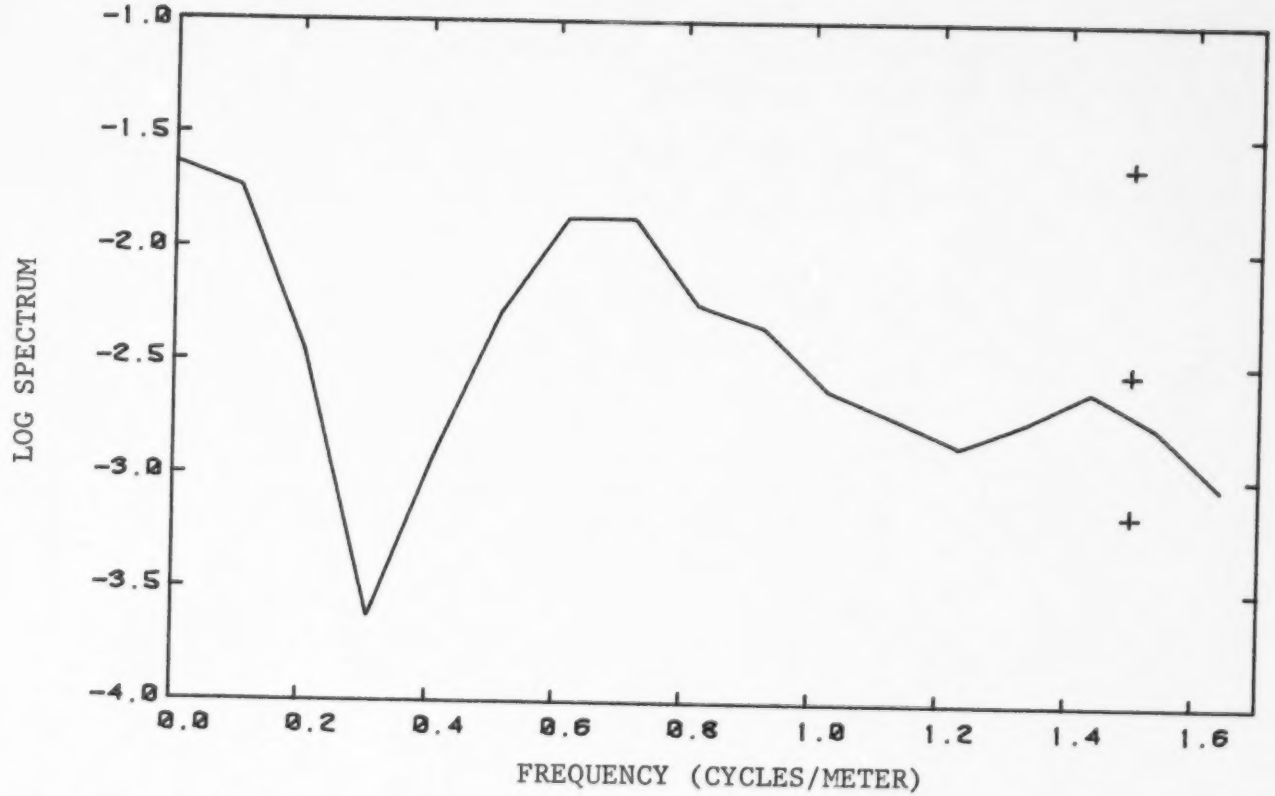

Figure 42c. Spectral estimate of the electrical conductivity in borehole S4; the + are 95% confidence intervals.

scale trend as some of the other samples. The covariance (Figure 42b) and spectral (Figure 42c) estimates approach what would be expected for uncorrelated data in that the covariance drops to zero very rapidly and the spectrum is nearly flat when the size of the 95% confidence interval is considered.

Chloride concentration--The chloride series (Figure 43a) is very similar to that of the electrical conductivity except that a trend toward increasing chloride with depth is observed. The effect of this trend is evident in the covariance estimate (Figure 43b) where the covariance drops off very rapidly, as with EC, but then tails off much longer. The spectral estimate is given in Figure 43c.

Grain size parameters--The geometric mean grain size (Figure 44) and the log standard deviation (Figure 44b) were determined from grain size analyses of the soil samples. Again the two clay layers of the log (Figure 19) are evident at about 7 and 13 m. Both series show considerable variation and a slight negative correlation between the two series is largely masked. The covariance estimate for the geometric mean grain size is given in Figure 44c.

Predicted hydraulic conductivity--The grain size parameters were used to predict the natural log of the hydraulic conductivity (Figure 45) using equation (6). Note that predicted hydraulic conductivity of the clay layers is 4 orders of magnitude below that of the sands.

Variograms

Variograms were calculated for the yearly average chemical concentrations in the shallow groundwater system to see if any correlation existed in two dimensions; these calculations are not presented, but indicate that the water quality measurements are essentially uncorrelated in space. Recall that the correlation interval observed from the transect data was on the order of 20 meters. The minimum distance between wells is approximately 150 meters.

Therefore, our sampling represents essentially uncorrelated observations of water quality. This, at least partially, justifies the use of conventional statistics to analyze the quality data in the MONITORING section. This reasoning will generally apply to the vertical dimension where our piezometers are usually separated vertically by distances greater than the observed correlation intervals from the borehole data.

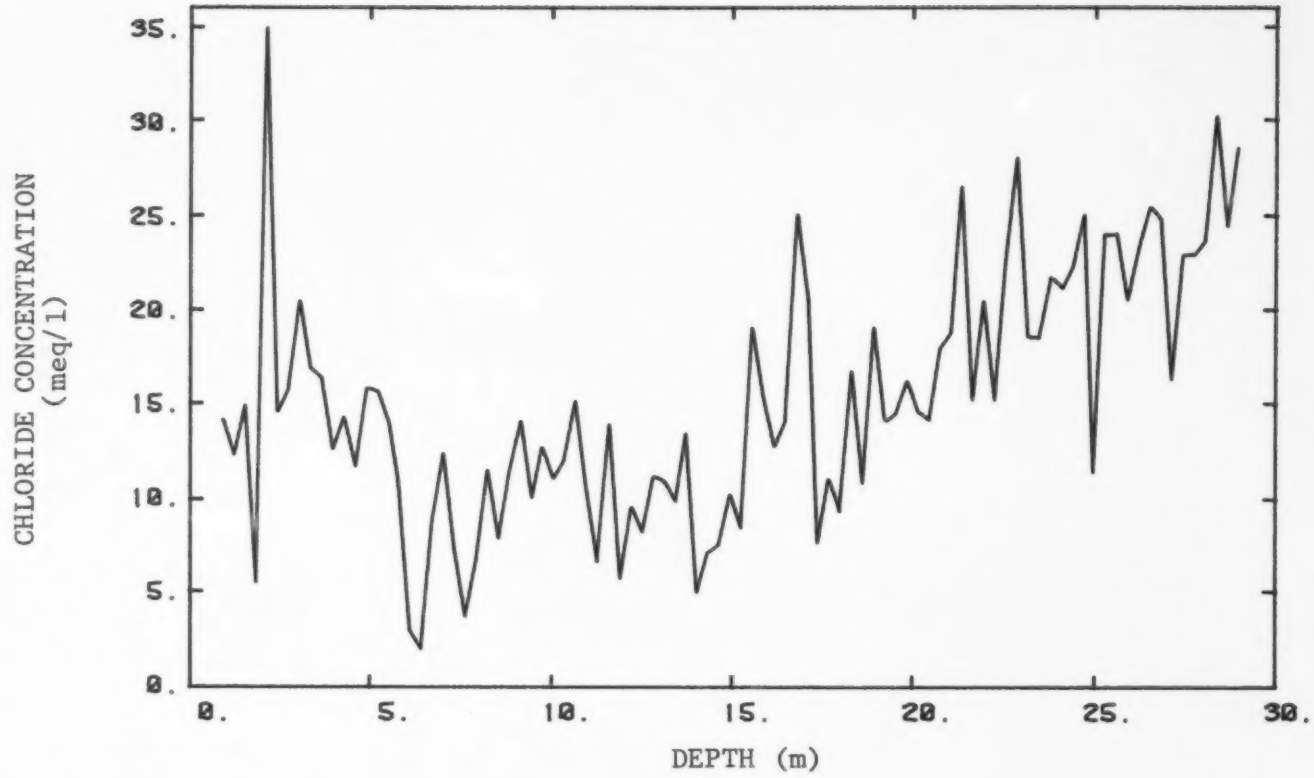

Figure 43a. Chloride concentration of soil extract samples at borehole S4.

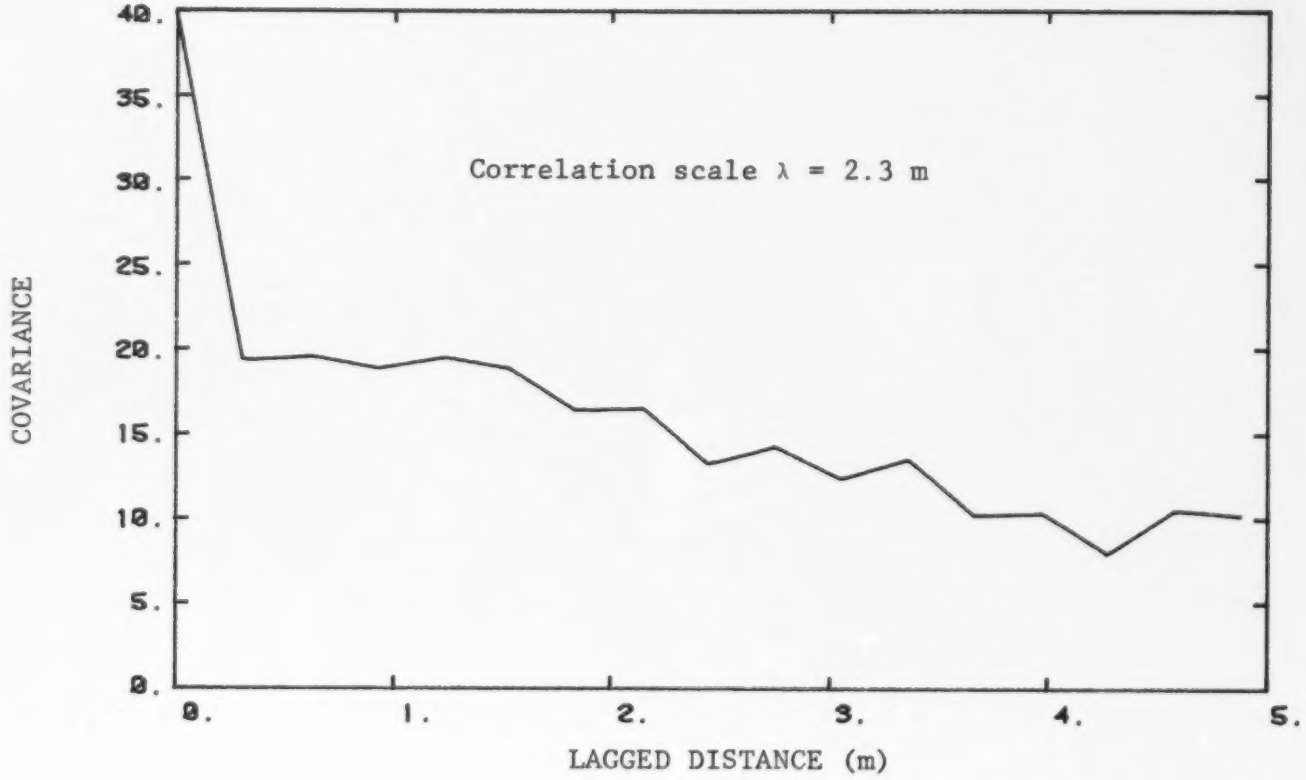

Figure 43b. Covariance estimate of chloride concentration in borehole S4.

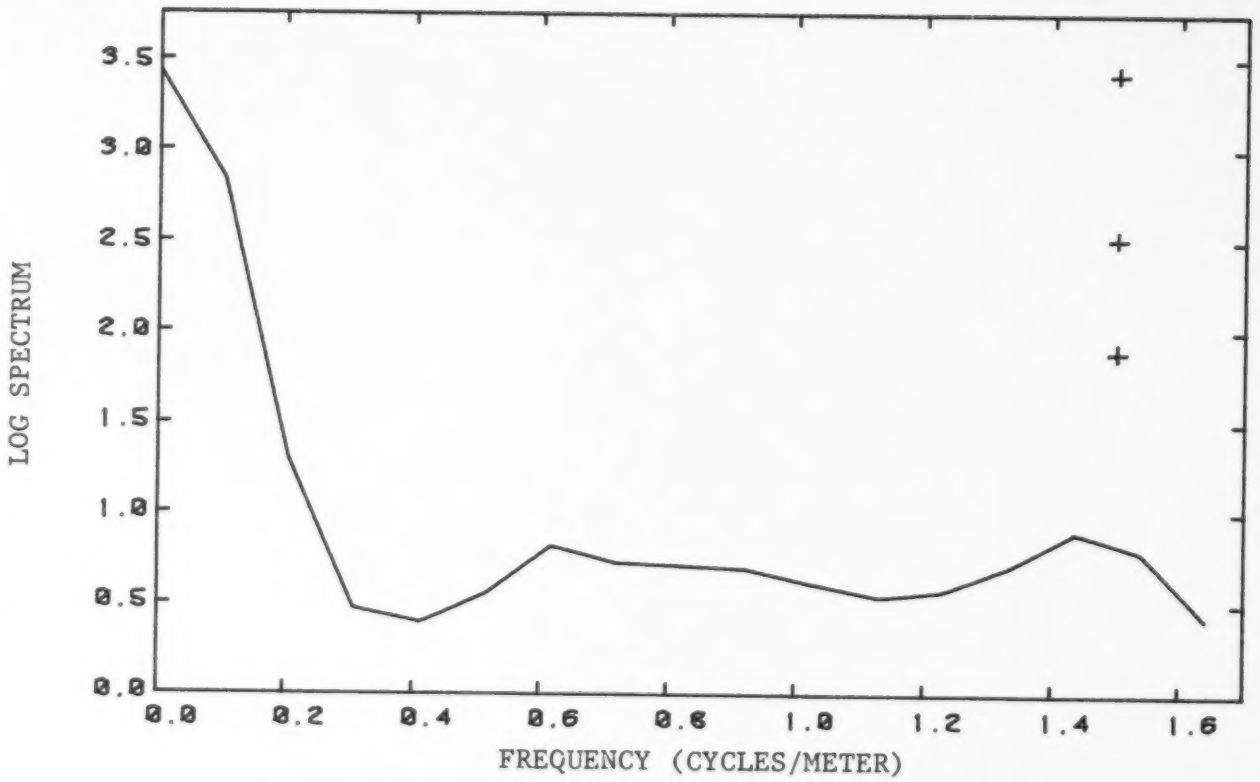

Figure 43c. Spectral estimate of the chloride concentration in borehole S4; the + are 95% confidence intervals.

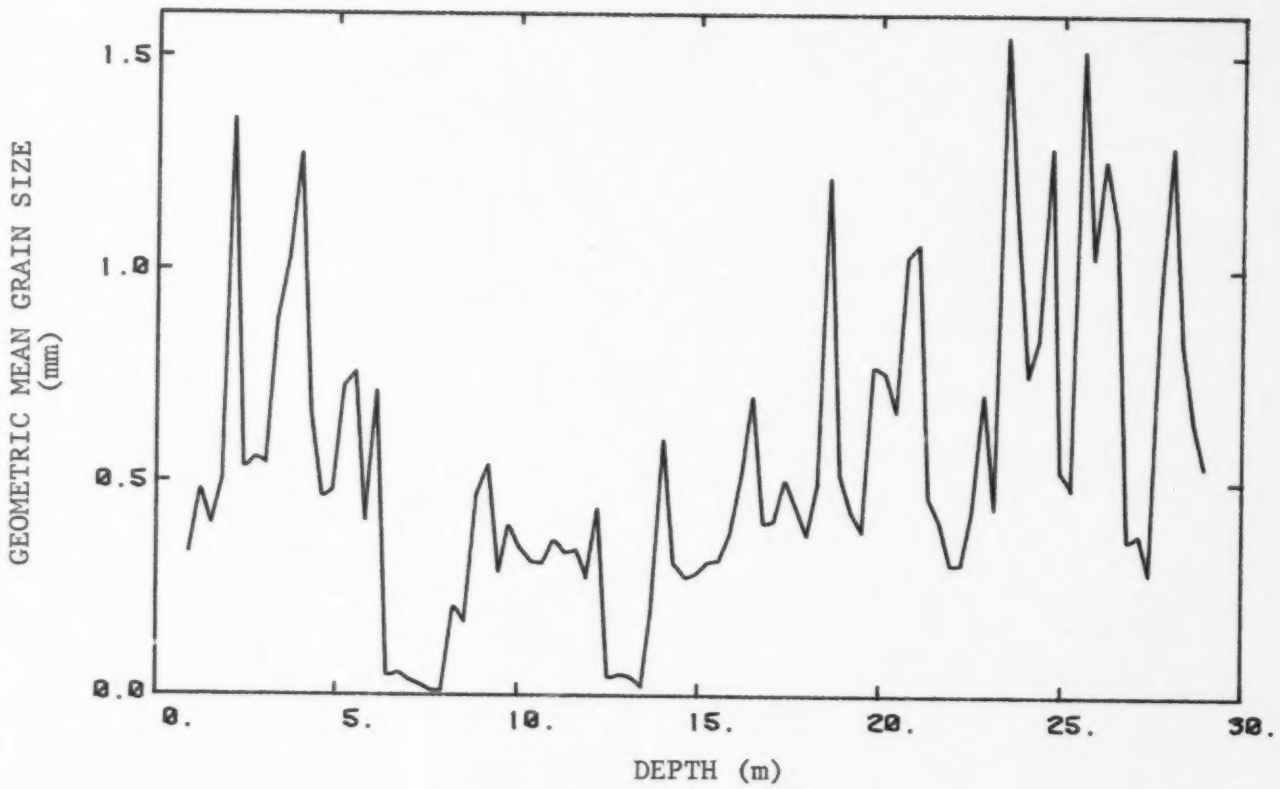

Figure 44a. Geometric mean grain size in borehole S4.

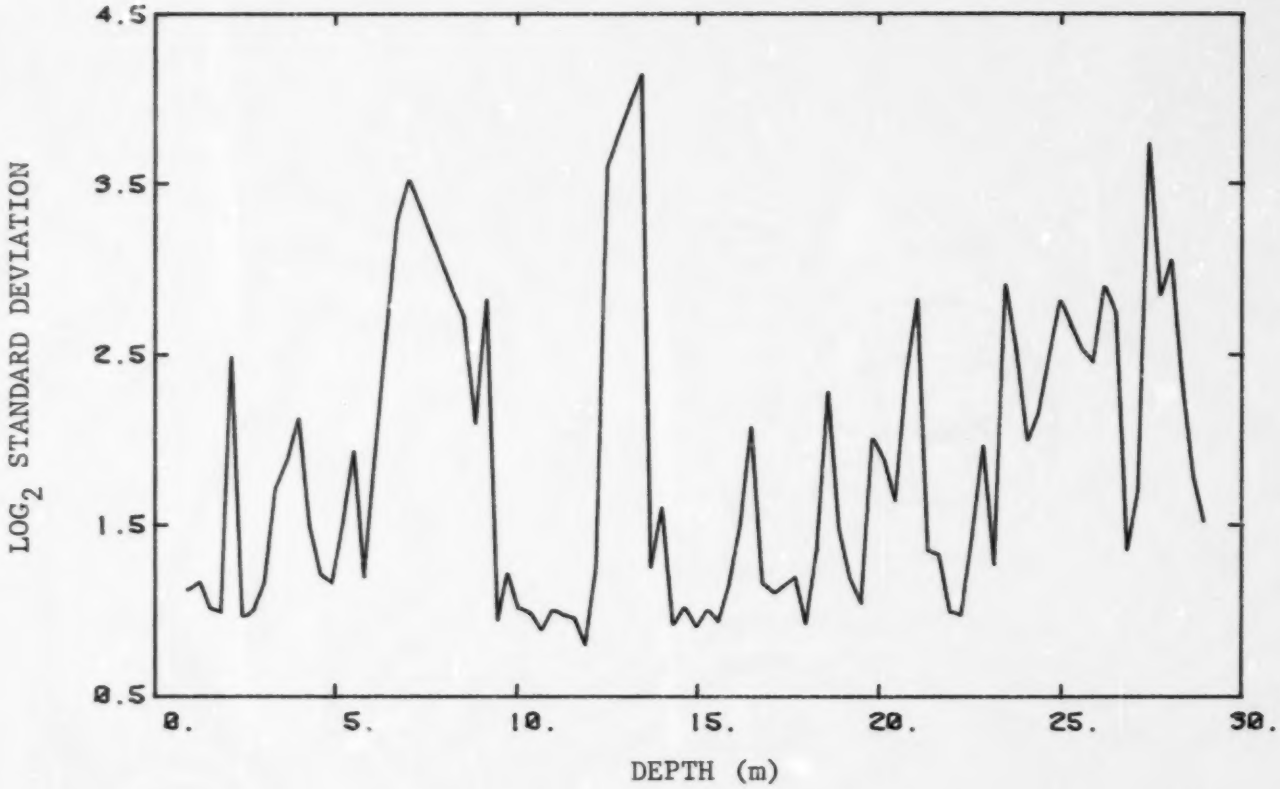

Figure 44b. Log_2 standard deviation of the grain size distribution in well S4.

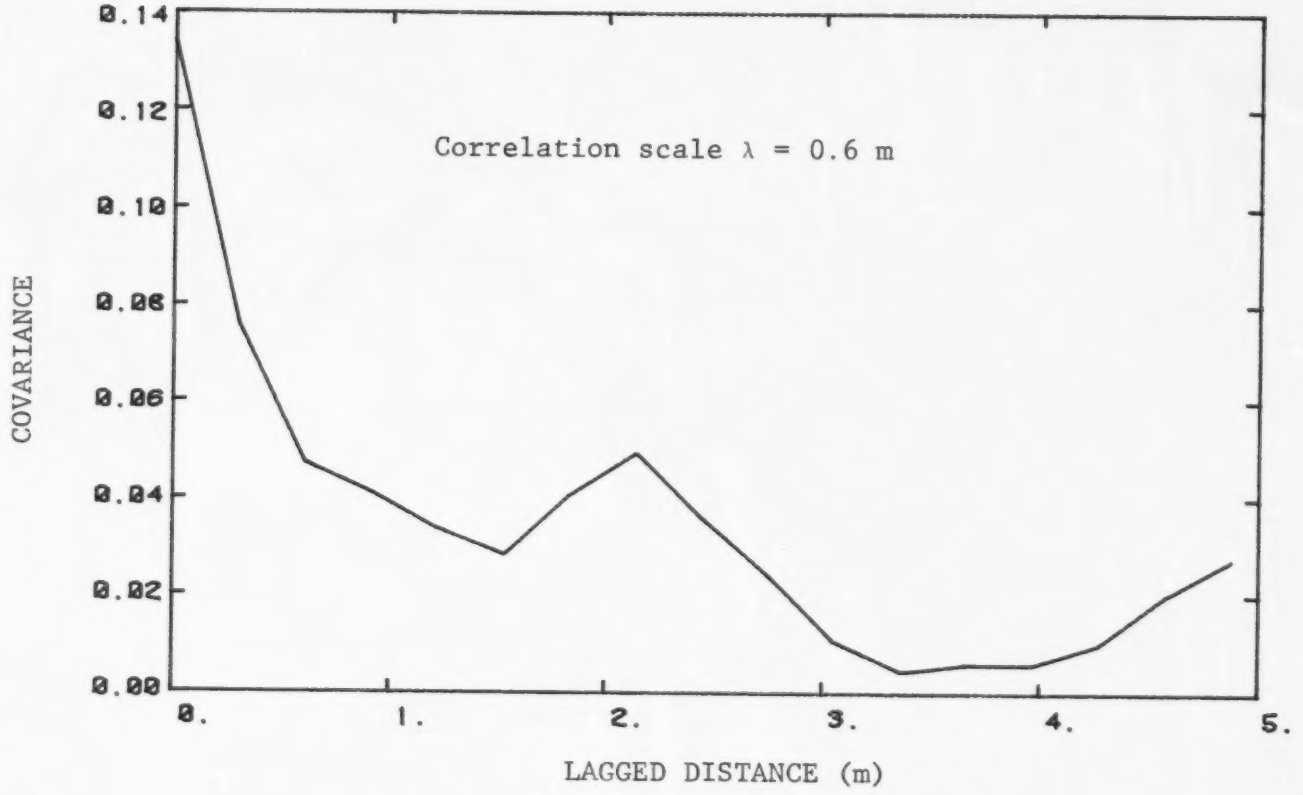

Figure 44c. Covariance estimate of the geometric mean grain size (mm) in borehole S4.

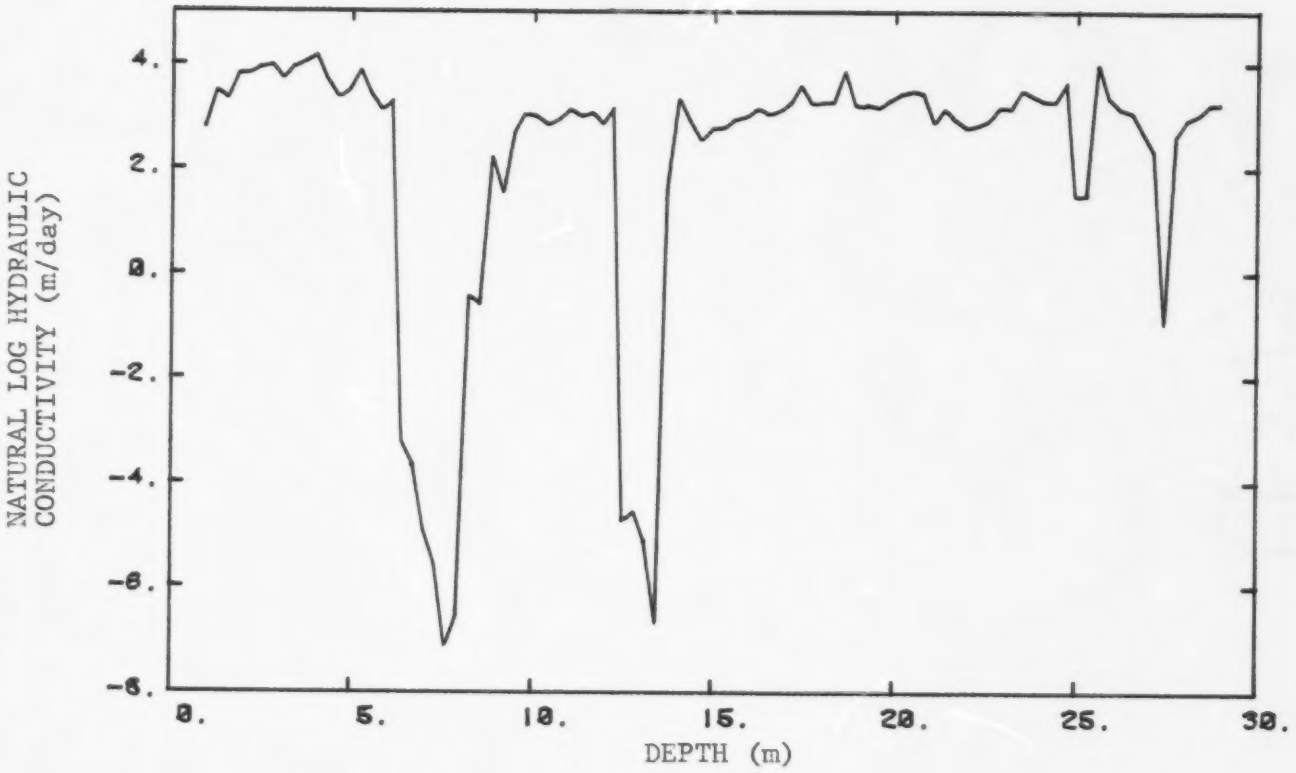

Figure 45. Predicted natural log of the hydraulic conductivity in borehole S4.

REMARKS

The temporal variability observations emphasize that water quality parameters of the irrigation water, the groundwater and the drain flow are subject to significant short-term (weekly) variations which can easily mask any long-term trends. These observations demonstrate that the irrigated hydrologic and water quality system is highly dynamic and point to the difficulty of coming to any definitive conclusions about water quality trends in such systems from only occasional (say annual or semi-annual) observations.

Similarily the spatial variability observations demonstrate that the flow and water quality parameters at the San Acacia site are highly variable in both the horizontal and vertical direction. Generally the correlation scales in the horizontal (on the order of 10 m) are significantly larger than the scales in the vertical (a meter or less). The correlation scale of water quality parameters tends to be larger than that of the infiltration rate of hydraulic conductivity (see Figures 25, 26 and 27). These observations also demonstrate the difficulty of realistically characterizing the properties of such an irrigated system from a small number (say 2 or 3) of observation wells or soil samples.

This section emphasizes the temporal and spatial variability data collected at the San Acacia site. Several related theoretical developments on the effects of natural variability were supported in part by this grant; the details of these developments are presented in the following publications:

1) Gelhar and Axness (1981) is a theoretical development on the effects of spatially variable hydraulic conductivity on solute transport in saturated flow.

2) Duffy (1982) reports on the theory and application of stochastic models which treat temporal and spatial variability in groundwater quality models. One of the applications therein uses data from the San Acacia site.

3) Yeh (1982) develops a stochastic theory of unsaturated flow in three-dimensionally heterogeneous soils. This work emphasizes predictions of effective flow properties of heterogeneous soils and the capillary pressure variance associated with the heterogeneity.

4) Duffy et al. (1982) develops a stochastic method of estimating aquifer parameters and irrigation efficiency and applies the method to data from the San Acacia site.

The next section deals with an effort to synthesize the information in Section 3 and 4 into a consistent description of the groundwater flow system at the San Acacia site.

SECTION 5

GROUNDWATER FLOW SYSTEM

From the preceding sections we know that the salinity of the drain water is greater than the salinity of the shallow groundwater. Also, a zone of high salinity underlies at least a portion of the farm. Ideally, one would like to identify the source of this high salinity water in order to construct a sound model of the behavior of this irrigated area. As will be shown, the flow system is highly complex, and as of now a definite source for the high salinity water cannot be identified.

POTENTIOMETRIC SURFACE

The logical first step in determining the source of the high salinity water is to determine the direction of groundwater movement from plots of the potentiometric surface in the horizontal and vertical directions.

Water Table Configurations

Generally, the shallow groundwater flows toward drains but, although many observation wells exist on the farm, it was not possible to construct water table maps adequate to determine the flow direction throughout the site. The areas where more data were needed were near the conveyance channels east of the farm and near the drains. Therefore in early July, 1980, many additional water levels measurements were made. The procedure was to hand-auger a hole to the water table and then to drive a sandpoint below the water table. Depth to water was measured until a steady value was achieved. The elevation of the water table was determined by measuring the difference in elevation between the well cap and a stake which had been located and surveyed earlier. In August, the elevation of water surface in both drains was also surveyed. The resulting grid of control points and the resulting water table map are presented in Figure 46. From the water table map, it appears that during the irrigation season leakage from the Socorro Main canal (SMC), nearest the farm, provides a source of groundwater. However, observations of water level changes in the SMC, the deeper Rio Grande Main Conveyance Channel (RGMCC), and the shallow groundwater indicate a strong interconnection between the groundwater and the RGMCC, but only a poor connection with the SMC.

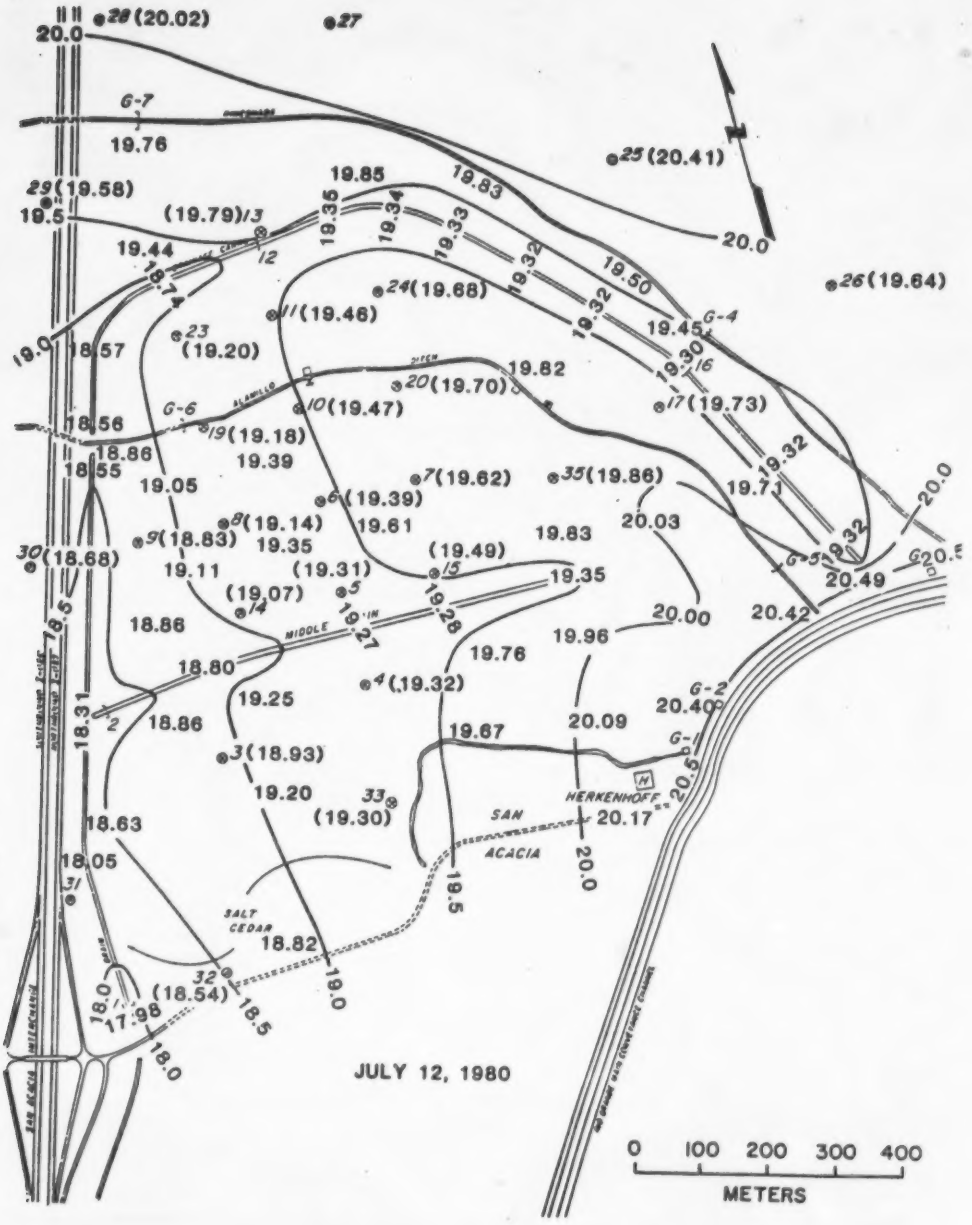

Figure 46. Water table map for July 1980; the numbers in parentheses are water levels at the numbered observation wells and the other numbers are additional observations located at the decimal point; the datum is 1400 m above MSL.

Also note the definite flow of water to the main drain from the north. The contribution of water from the west is less than from the north. An anomalous condition was present near well 13 due to the presence of a beaver dam on the main drain at that location. Note that the water level in the drain is practically constant upstream of that point also due to the beaver dam. Figure 47, the water table map for the summer, 1979, shows the more realistic water table configuration in that area. The winter water table configuration (Figure 48) shows a very similar pattern to that of the summer. Generally the Rio Grande Main conveyance channel carries water throughout the year and provides a sorce of shallow groundwater, but in periods of low flow, it most likely acts as a drain.

From the water table maps, it can be seen that groundwater enters the farm as leakage from the conveyance channels, from groundwater in the surrounding area north, and west, and of course, from irrigation. The maps (Figures 47 and 48) were based on average heads over a period of 6 weeks to eliminate anomalous values due to irrigation.

Vertical Potentiometric Surface

A vertical potentiometric surface profile (Figure 49) can be drawn in a roughly north-south direction from wells NW33 and NW73 on the north to well DW54 on the south. Only 1981 data are presented because four wells (DW18, DW63, NW33, NW73) were not installed until early 1981. The drains, main and middle, correspond to locations 13 and DW54, respectively on Figure 49.

In general, the groundwater appears to flow from the north to the south with local perturbations caused by the drains. The high salinity water (wells DW50, DW63, DW65, DW54) appears to come from the north based on Fig. 49. However, the hypothesis of high salinity water from the north does not seem to be supported by water quality data.

WATER QUALITY

Vertical Variation of Water Quality

Figure 50 shows the yearly averages of EC, chloride, sodium and calcium for 1981 on the same north-south vertical cross section. Possible flow system behavior can be hypothesized by viewing chloride to be practically conservative. Chloride levels in the deep wells at and between the drains (DW18, DW63, DW25, DW50, DW65, DW54) in the central part of the site are generally in the range of 20 to 30 meq/l, implying some external source of relatively high salinity water. However, the deep wells to the north and northeast of the site (NW33, NW73, EW74) generally show lower chloride levels (10-20 meq/l) as do the shallow wells surrounding the site (sites 25 through 30, see Table 6).

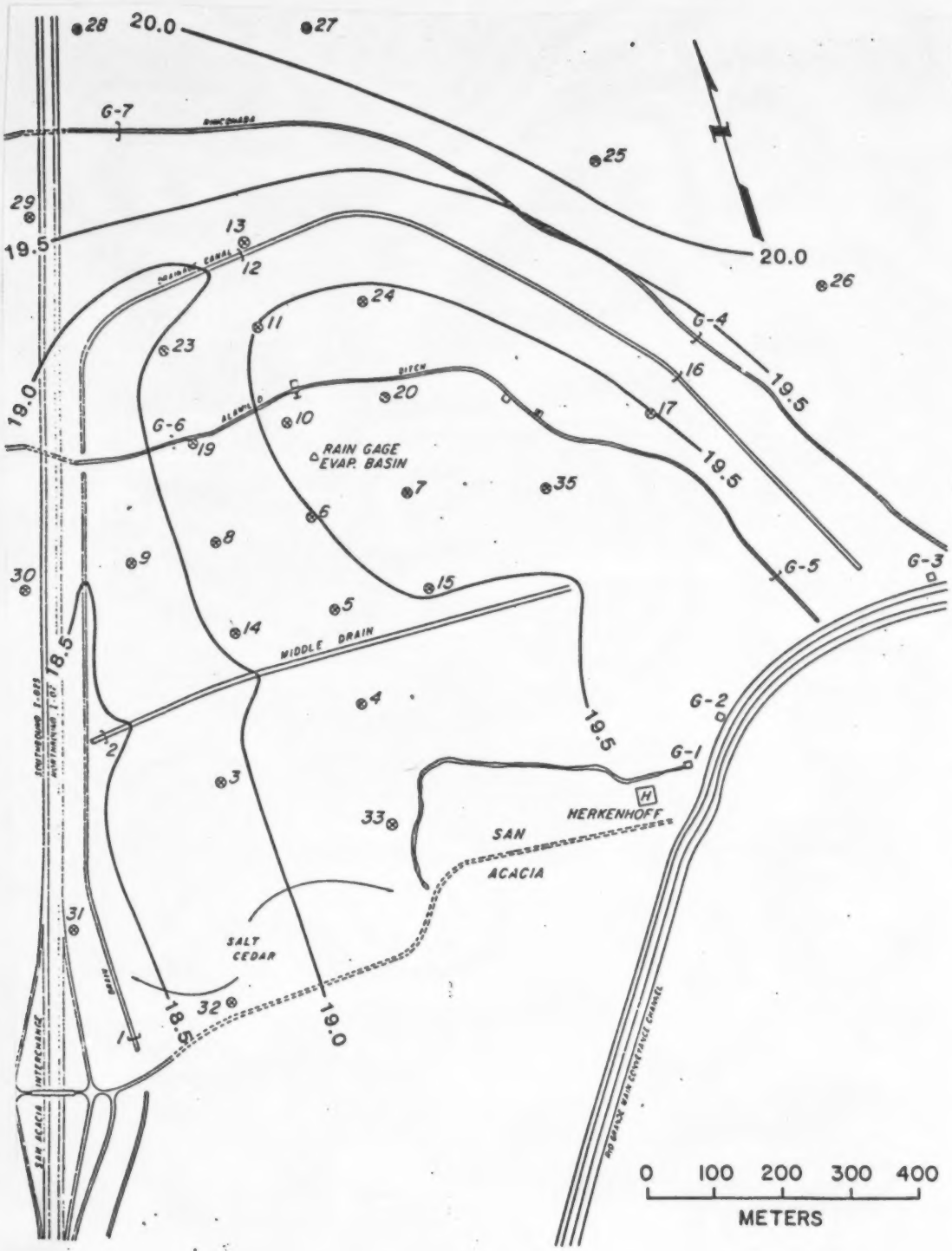

Figure 47. Water table map for the summer of 1979; datum is 1400 m above MSL.

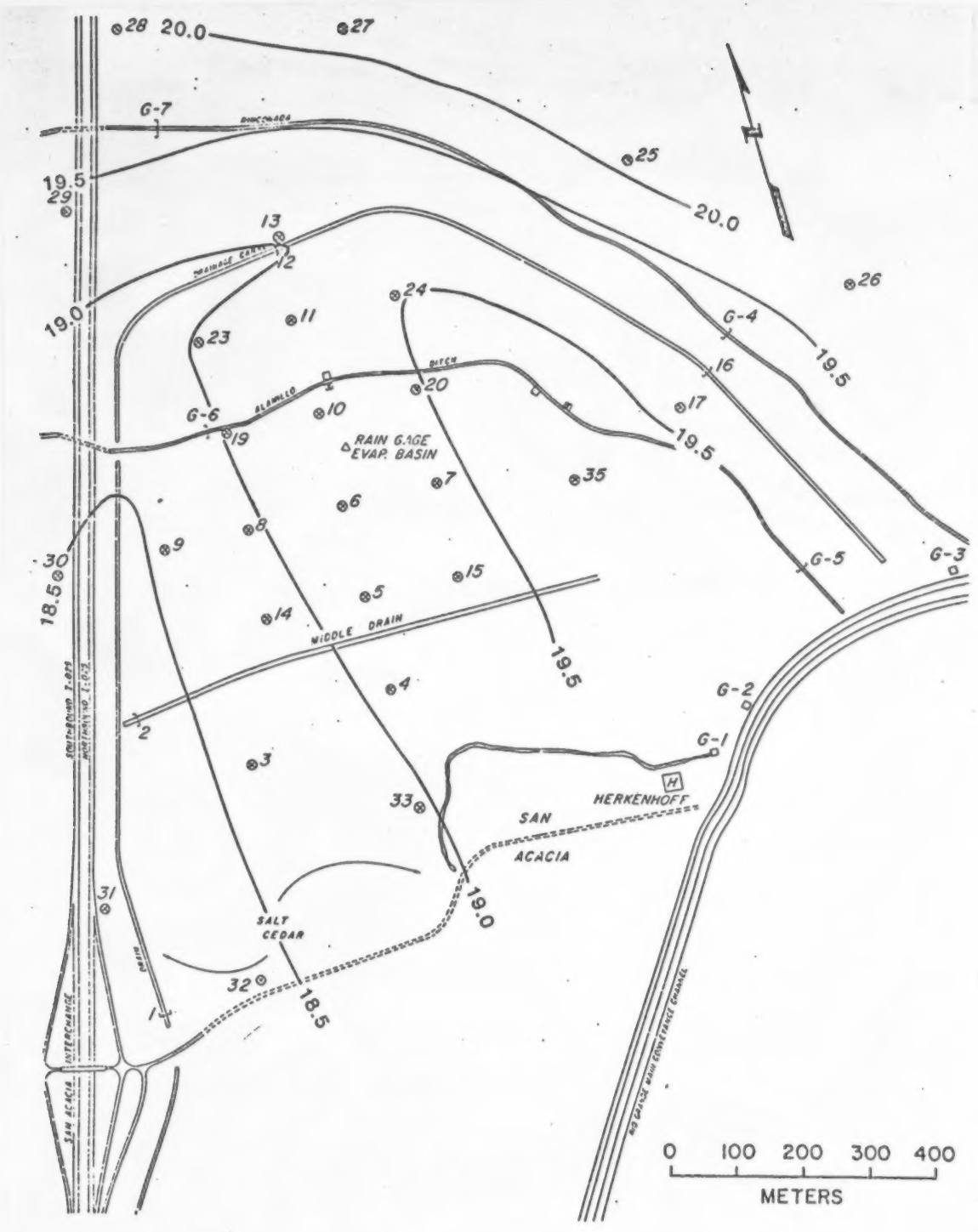

Figure 48. Water table map for the winter of 1978-79; datum is 1400 m above MSL.

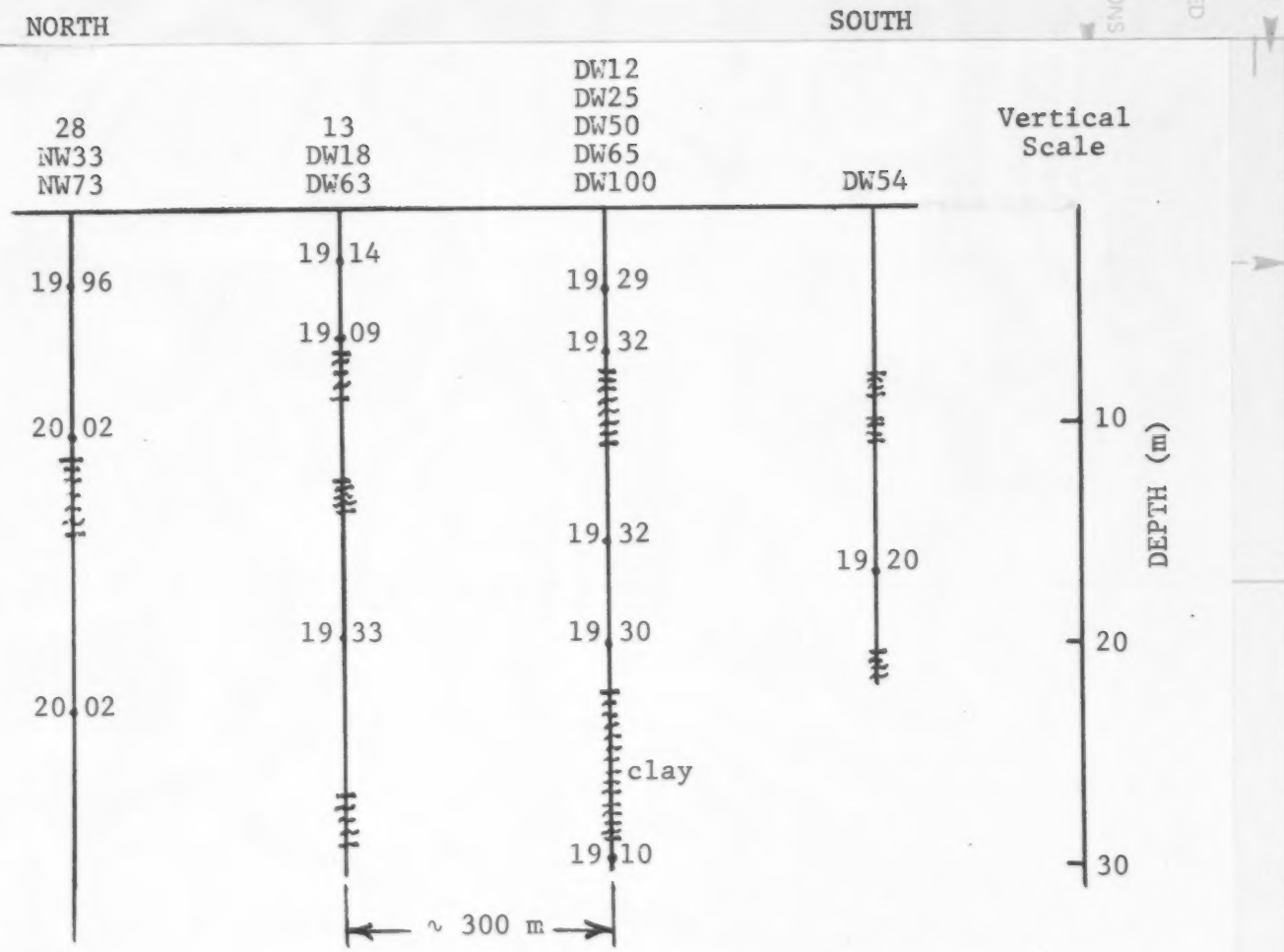

Figure 49. Average head at selected wells in the north-south vertical section during 1981; water levels are in meter above 1400 m MSL; the wells are designated above each location with the center of each piezometer indicated by the dicimal point. The clay layers are indicated by the wavy lines.

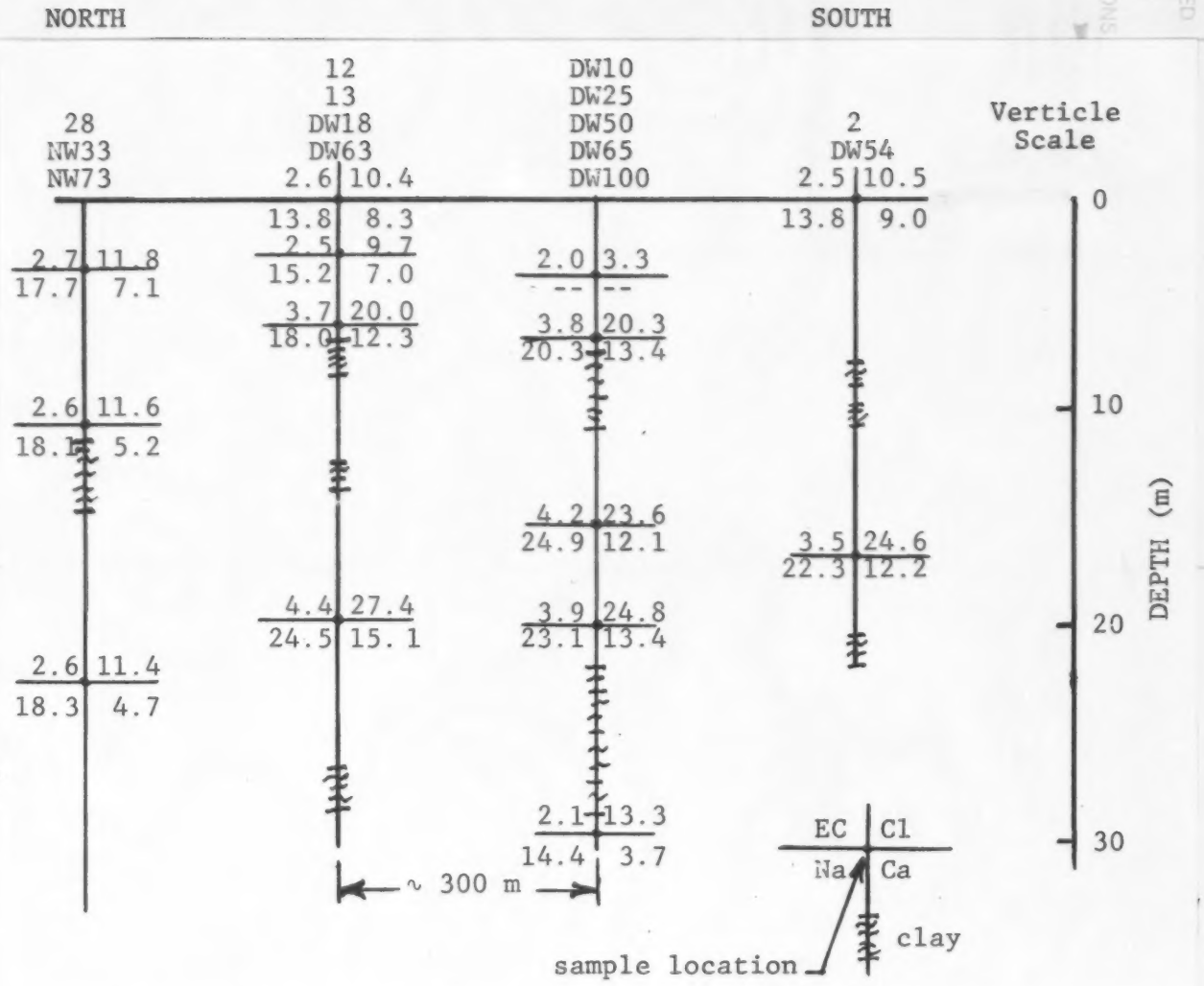

Figure 50. Average electrical conductivity (dsm^{-1}), chloride, sodium and calcium concentrations (meq/ℓ) at selected wells in the north-south vertical section for 1981: the wells are designated above each location with the center of each piezometer indicated by the decimal point.

Therefore, the water north and northeast of the farm does not appear to be the source of high salinity water.

Another possible source of high salinity water is that the area under farm is the discharge point of some large, regional scale flow system. If we examine the cross section, however, we see that DW100 has a significantly lower chloride level than DW63 or DW65. In fact, DW100 is similar in character and quality to the northern wells. From all indications, the dissolution of chloride rich minerals is not likely because no such material has been encountered in the numerous boreholes augered on the farm.

Tritium analyses of the wells at the weather station, and the drain well, (Table 18) indicate that the water above the clay layer at 7.6 meters is relatively recent. The deep wells DW65, DW100 and the drain well are relatively old, probably pre-1953 which is when the atmosphere testing of thermonuclear devices began. Well DW50 appears to show a mixing of older and younger waters possibly due to leakage around the well. On the other hand, well DW50 may represent the depth to which the shallow water has traveled through the clay. The tritium concentration at well EW74 indicates that this water is relatively recent recharge. The deep, high salinity water, may be a stagnant, isolated zone. This idea of a stagnant zone of high salinity doesn't agree with the measured salinity in drain 2. The shallow groundwater must be mixing with water of high salinity to produce the observed drain 2 salinity. The tritium analyses were performed by Dr. G. W. Gross at the New Mexico Institute of Mining and Technology, Socorro, New Mexico.

The observations of EC and Cl at well DW25, located at the weather station, shows a rather dramatic annual cyclic pattern (see Figure 23); the chloride concentration seems to fluctuate between the level of the shallow groundwater (eg. well 10, Fig.20b) and that of the deeper wells (DW50, DW65, DW54, DW63). Well DW25 is screened just above the clay layer and the implication is that higher salinity water is transported upward through the clay in response to the annual cycle of irrigation. For some unexplained reason the reduction in chloride levels lags the irrigation season by about 6 months.

The deep, high salinity water is the most likely source of salinity to drain 2, but some questions arise. If the high salinity water is entering drain 2, why was it not replaced years ago by water similar to that north of the farm. Although no source of high salinity water was located around the farm or at depth beneath the farm, it seems most likely that higher salinity waters are upwelling at some undiscovered locations on the farm. This upwelling flow could reflect the discharge area of a large regional groundwater flow system. This hypothesis of upwelling regional flow is adopted as the conceptual framework for the modeling developments in the following section.

TABLE 18. Tritium analyses of groundwater samples.

Well Location	Designation	Depth-m	Tritium Concentration-TU
August 1980			
Weather Station	DW10	3.0	51.2 ± 1.5
" "	DW25	7.6	53.6 ± 1.9
" "	DW50	15.2	17.0 ± 0.7
" "	DW65	19.8	4.7 ± 0.6
" "	DW100	31.1	4.7 ± 0.6
Drain 2	DW54	16.5	6.6 ± 0.6
August 1981			
Weather Station	DW25	7.6	31.0 ± 1.0
" "	DW50	15.2	18.3 ± 1.1
" "	DW65	19.8	-0.5 ± 0.6
" "	DW100	31.1	0.1 ± 0.9
NE of farm	EW74	22.6	20.8 ± 1.0
Drain 1	DW18	5.5	3.5 ± 0.6
"	DW63	19.2	-0.6 ± 0.6
Drain 2	DW54	16.5	3.3 ± 0.6
North of farm	NW33	10.1	18.7 ± 0.7
" " "	NW73	22.3	9.8 ± 0.8

SECTION 6

MODELING

In this section two types of models are applied to simulate the irrigation-related water quality behavior of the San Acacia site. The observations presented in Sections 3, 4 and 5 bring out two key features of the aquifer system at this site: (1) the layered structure of the aquifer and water quality parameters and (2)the upwelling regional flow of relatively high salinity water beneath the site. In addition, the observations generally show that flow and water quality conditions vary considerably in time at the site (see Figures 20-24).

In order to incorporate the dynamic effects of such unsteady phenomena, a simple lumped parameter model is developed and applied to the practically conservative solute, chloride. The lumped parameter model is conceptualized with two cells to represent the layered structure of the aquifer and includes a regional inflow term. The understanding which evolves from the application of this simple water and mass balance approach is then used to guide the development of a more refined distributed model which includes the effects of chemical reactions.

The second model is based on the USBR-EPA hydrosalinity model (Shaffer et al., 1977) modified to account for the layered aquifer structure and the regional inflow. A finite element flow model is used to simulate the steady streamline pattern required for the USBR-EPA model. Results of the two models are compared, with emphasis on the importance of the dynamic (unsteady) effects at the San Acacia site.

The irrigated area contributing to the middle drain above sampling site 2 was selected for the model applications because intensive data were available for that area and it is more isolated from external effects.

TWO-CELL LUMPED PARAMETER MODEL

The following model was use to simulate middle drain chloride concentration and chloride mass output for the years 1978 through 1980. It includes the effects of transient flow and a regional inflow component. The base of the flow system is taken as the surface of the lower clay and the cell division is marked by the upper surface of the shallow clay. In a similar

study by Senn (in Gelhar et al., 1980, pp. 71-110) this system was treated as a single cell.

Model Development

The two-cell representation of the physical system is shown in Figure 51. The upper layer possesses specific yield S_y, effective porosity n_1, hydraulic conductivity K_1, average saturated thickness $h_1(t)$, and average concentration $C_1(t)$. The lower layer has effective porosity n_2, hydraulic conductivity K_2, constant saturated thickness h_2, and average concentration $C_2(t)$. Regional flow is assumed to enter or exit the system through the base of the lower layer at a rate q_r. Irrigation recharge enters the upper layer at the rate ε_1 and interlayer flow occurs at a rate of ε_2. Irrigation recharge is the amount of applied irrigation water that infiltrates through the root zone and reaches the groundwater. Evapotranspiration from the groundwater is assumed negligible.

Employing the Dupuit assumptions of a fully penetrating drain and negligible vertical gradients (Figure 51), for any fixed time the drain flow contribution per unit length of drain from the layers may be written as

$$Q_1 = - K_1 h_1 \frac{dh_1}{dx} = - T_1 \frac{dh_1}{dx} \tag{6}$$

and

$$Q_2 = - K_2 h_2 \frac{dh_1}{dx} = - T_2 \frac{dh_1}{dx} \tag{7}$$

where T_1 is the average upper layer transmissivity and T_2 is the lower layer transmissivity. Assuming that the water level in the drain does not vary, the change in layer outflow as the drain is approached can be expressed in terms of the accretion rates to or from each layer as

$$- \frac{dQ}{dx} = \varepsilon_I - \varepsilon_2 \tag{8}$$

and

$$- \frac{dQ_2}{dx} = \varepsilon_2 + q_r \tag{9}$$

Substituting equations (6) and (7) into (8) and (9) respectively, and equating second derivatives of h_1 yields

$$\varepsilon_2 = [(T_2/T_1)\varepsilon_I - q_r]/(1 + T_2/T_1) \tag{10}$$

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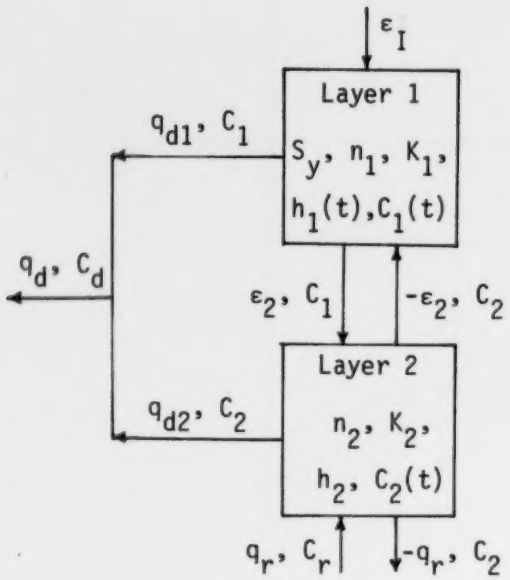
(a)



(b)

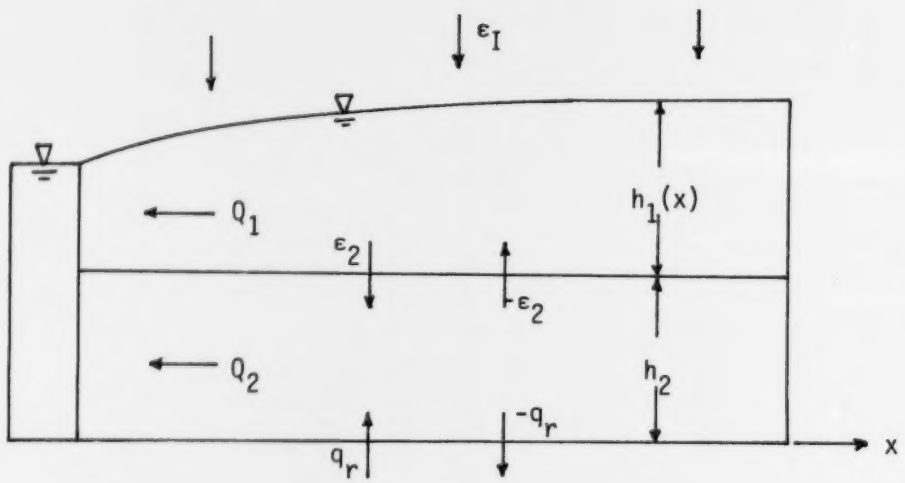


Figure 51. Transient two cell aquifer representation, (a); and, two layered Dupuit aquifer, (b).

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The flow between layers is thus dependent on the transmissivity ratio and the irrigation recharge and regional flow rates. When $(T_2/T_1)\,\varepsilon_I$ is less than q_r, ε_2 is negative and the interlayer flow is from the lower to upper layer.

By analogy to the single cell model of Gelhar and Wilson (1974) the water balance equations for the individual layers may be stated as

$$S_y \frac{dh_1}{dt} = \varepsilon_I - \varepsilon_2 - q_{d_1} \tag{11}$$

and

$$0 = \varepsilon_2 + q_r - q_{d_2} \tag{12}$$

where q_{d_1} and q_{d_2} are the drain outflows per unit aquifer area from the two layers and h_1 now represents the average thickness of the upper layer. Adding equations (11) and 12) yields the water balance equation for the system

$$S_y \frac{dh_1}{dt} = \varepsilon_I + q_r - q_d \tag{13}$$

where q_d is the total drain flow rate from the system. Equation (13) may be used to determine the regional inflow rate if the specific yield is known and the total drain flow rate, irrigation recharge rate, and average upper layer saturated thickness are known functions of time. A negative value of q_r indicates flow is leaving the system through the lower layer base.

The mass balance equations for the two layers are dependent on the directions (signs) of ε_2 and q_r. Assuming the irrigation recharge rate is always nonnegative, it can be seen from equation (10) that the following three states are possible for the flow system:

(1) ε_2 , $q_r > 0 \rightarrow$ regional inflow and flow from upper to lower layers;

(2) $\varepsilon_2 > 0$, $q_r < 0 \rightarrow$ regional outflow and flow from lower to upper layers;

(3) $\varepsilon_2 < 0$, $q_r > 0 \rightarrow$ regional inflow and flow from lower to upper layer.

The mass balance equations for state (1) will now be developed from which the equations for states (2) and (3) will be generalized.

For system state (1), a mass balance for a contaminant of average concentration $C_1(t)$ in the upper layer is given by

$$n_1 \frac{d}{dt}(h_1 C_1) = \varepsilon_I C_I - \varepsilon_2 C_1 - q_{d_1} C_1 \tag{14}$$

where C_I is the irrigation recharge concentration. Expanding the derivative in (14) and substituting (11) in the form

$$n_1 \frac{dh_1}{dt} = (n_1 - S_y) \frac{dh_1}{dt} + \varepsilon_I - \varepsilon_2 - q_{d_1}$$

yields a more convenient form of the mass balance equation

$$n_1 h_1 \frac{dC_1}{dt} + (n_1 - S_y) C_1 \frac{dh_1}{dt} = \varepsilon_I (C_I - C_1) \tag{15}$$

Similarly, the mass balance equation for a contaminant of average solute concentration $C_2(t)$ in the lower layer is

$$n_2 h_2 \frac{dC_2}{dt} = \varepsilon_2 C_1 + q_r C_r - q_{d_2} C_2 \tag{16}$$

where C_r is the concentration of the regional inflow. Substitution of equation (12) into (16) produces the alternate form of the lower layer mass balance equation

$$n_2 h_2 \frac{dC_2}{dt} = \varepsilon_2 (C_1 - C_2) + q_r (C_r - C_2) \tag{17}$$

In system state (2), the regional flow term of (16) becomes an outflow carrying the concentration of the lower layer. Under these conditions the lower layer mass balance equation is

$$n_2 h_2 \frac{dC}{dt} = \varepsilon_2 (C_1 - C_2) \tag{18}$$

and the upper layer mass balance equation is identical to (15).

In system state (3), regional flow enters the lower layer and the interlayer flow is from the lower to upper layer. The mass balance equations for this system state are

$$n_1 h_1 \frac{dC_1}{dt} + (n_1 - S_y) C_1 \frac{dh_1}{dt} = \varepsilon_I (C_I - C_1) - \varepsilon_2 (C_2 - C_1) \tag{19}$$

for the upper layer, and

$$n_2 h_2 \frac{dC_2}{dt} = q_r (C_r - C_2) \tag{20}$$

for the lower layer. For all system states, the drain concentration is obtained by mixing the outflows from the two layers according to

$$C'_d = \frac{q_{d1}}{qd} C_1 + \frac{q_{d2}}{qd} C_2 \qquad (21)$$

Model Application

Parameter Assignment--

In order to apply the model, the time dependent parameters - q_d, ε_I, C_I, ε_2, q_r, and h_1 - must be determined as well as the constant parameters - n_1, n_2, S_y, h_2, C_r, K_1/K_2, and the simulation time increment. The time increment used in this study is a four week period, thus periods 1 through 13, 14 through 26, and 27 through 39 represent the years 1978, 1979 and 1980 respectively. The regional inflow concentration (assumed constant) and hydraulic conductivity ratio will remain as unspecified parameters, the optimum values of which will be determined from model runs. The assignment of the remaining parameters will now be discussed.

The upper cell is assigned to the zone composed predominantly of sand above the clay appearing at a depth of about 7.3 m. The remainder of the system, consisting of the shallow clay and sand and gravel deposits between it and the deeper clay, is assigned to the lower cell. The deeper clay is roughly 21 m below the surface which implies a lower layer saturated thickness of about 13.7 m. An effective porosity of 0.35 was assigned to the upper layer based on the measured values from 10 samples collected from the upper part of the upper aquifer (Simonett, 1981). The lower layer effective porosity was assumed to be 0.30 based on a lithological comparison with the upper layer. A specific yield of 0.19 determined from drain flow recessions was also used as the effective porosity in the single cell study by Senn (in Gelhar et al., 1980, pp. 71-110). Laboratory tests on a column of repacked sand taken from a depth of 1.0 m indicated a specific yield of 0.13. Based on these determinations a value of 0.15 was assigned to the specific yield.

Weekly depth to water measurements for 13 wells in the vicinity of the middle drain are available for the study period. The Theissen polygon method was employed by Senn to determine weekly average water table positions using these wells. Using the area percentages the average water table elevation was computed for each week. The three year mean water table elevation corresponds to a depth to water of roughly 1.2 m. Therefore, the average saturated thickness of the upper layer, about which weekly fluctuations occur, is 6.1 m. The three year mean water table elevation was subtracted from each weekly

average elevation to obtain the weekly fluctuation. These fluctuations were then added to 6.1 m to obtain the average upper layer saturated thickness for each week. Each four week period is assigned the average saturated thickness corresponding to the last week of the period. These values are listed in Table 19.

The average volumetric drain flow for each four week period was obtained from continuous discharge records. The volumetric discharge is converted to an outflow rate by dividing by the aquifer area. The aquifer area contributing flow to the middle drain is 24.1 hectares as determined by Senn (see Gelhar et al., 1980, Figure 3.2.4) from a contour map of April 1978 water table elevations. The weekly drain chloride concentrations were arithmetically averaged for each four week period. Comparison of the arithmetically averaged concentrations to flow weighted drain concentrations for 1980 displayed a maximum disagreement of 7 percent. The arithmetically averaged concentrations were therefore assumed to be representative of the drain effluent. The drain outflow rate and concentration for each period is listed in Table 19.

The amount of applied water for each period includes the accumulative amounts of both irrigation water and precipitation. The irrigation application depths were determined from diversion and irrigated area records, and the precipitation depths were obtained from rain gage data. Weekly irrigation water concentrations were averaged for each four week period and flow weighted with zero concentration precipitation to obtain the concentration of the total applied water. The total application amounts and corresponding concentrations for each period are also listed in Table 19.

The amount and concentration of groundwater recharge resulting from each surface application is dependent on the irrigation efficiency and the amount of tailwater. The irrigation efficiency is the percentage of applied water which is evaporated or transpired by plants. The leaching fraction is the complement of the irrigation efficiency and represents the percentage of applied water which becomes groundwater recharge. Tailwater is the percentage of applied water which enters the drain either directly or by shallow interflow near the drain. Considering the loss due to tailwater, the portion of applied water available for consumptive use or recharge is

$$q_I = (1 - \eta)\ \hat{q}_I$$

where $\hat{q}_I$ is the application rate and η is the tailwater coefficient. The amount of recharge for a given application is

$$\varepsilon_I = (1 - \mu)\ q_I + (1 - \mu)(1 - \eta)\ \hat{q}_I \qquad (22)$$

where μ is the irrigation efficiency. The corresponding recharge

TABLE 19: Applied water and chloride concentration, drain outflow rate and chloride concentration, and upper layer saturated thickness for each four week period.

Period No.	Applied Water $\hat{q}_I$(m/4wk)	Applied Conc. $\hat{C}_I$(meq/l)	Drain Flow $\hat{q}_d$(m/4wk)	Drain Conc. $\hat{C}_d$(meq/l)	Saturated Thick. h_1(m)
1	.0049	0	.0070	10.73	5.80
2	.0314	0	.0143	11.09	5.83
3	.0046	0	.0165	10.41	5.85
4	.0218	1.49	.0633	9.72	5.98
5	.0280	1.22	.1280	8.22	6.32
6	.2149	0.91	.1673	8.74	6.31
7	.2914	0.97	.1920	8.55	6.16
8	.2377	1.25	.1734	8.09	6.20
9	.2259	1.22	.0960	9.76	5.96
10	.2509	1.34	.0762	9.54	5.94
11	.2225	1.49	.0582	9.22	6.07
12	.0162	0	.0475	9.39	6.07
13	.0101	0	.0677	9.88	6.01
14	.0140	0	.0811	9.24	6.07
15	.0137	0	.0741	9.97	6.12
16	0	0	.0725	9.78	6.05
17	.3030	1.10	.2091	9.40	6.25
18	.1332	1.06	.2134	8.54	6.30
19	.2743	1.22	.2070	10.00	6.38
20	.2670	0.75	.2118	9.05	6.27
21	.2320	1.29	.1905	10.07	6.09
22	.2045	0.97	.1658	9.97	6.11
23	.1497	0.85	.0753	10.31	6.04
24	.1579	1.04	.1195	10.66	6.01
25	.0143	0	.0527	9.84	5.96
26	.0107	0	.0463	10.53	5.97
27	.0064	0	.0369	10.91	5.94
28	.0219	0	.0314	9.28	6.00
29	0	0	.0341	11.66	6.03
30	.2411	1.49	.1337	10.10	6.26
31	.0808	1.30	.1594	8.57	6.16
32	.0364	1.45	.2618	9.70	6.32
33	.0217	0.85	.2362	10.07	6.23
34	.2844	1.24	.1564	8.21	6.19
35	.2161	0.92	.1137	9.97	6.33
36	.1106	1.11	.1253	8.10	6.07
37	0	0	.0683	9.09	6.09
38	.0024	0	.0741	9.35	6.07
39	.0101	0	.0710	9.00	6.07

concentration is given by

$$C_I = \hat{C}_I/(1 - \mu) \tag{23}$$

where $\hat{C}_I$ is the applied water concentration. Senn computed an irrigation efficiency of 0.55 for the year 1978 during which the aquifer area was almost entirely covered by alfalfa. The 1979 alfalfa composed roughly two thirds of the aquifer area and the remainder was planted with corn. During 1980 over half of the aquifer area was allotted to corn. Based on these cropping patterns and the higher consumptive use of alfalfa than corn, irrigation efficiencies of 0.55 for 1978 and 1979 and 0.50 for 1980 were assumed in the model.

Tailwater also produces a greater flow and lower concentration in the drain as compared to the actual aquifer outflow and concentration. The drain flow due to aquifer outflow is given by

$$q_d = \hat{q}_d - \eta\hat{q}_I \tag{24}$$

where q is the measured drain flow rate. The corresponding drain concentration due to aquifer outflow is

$$C_d = (\hat{q}_d\hat{C}_d - \eta\hat{q}_I\hat{C}_I)/(\hat{q}_d - \eta\hat{q}_I) \tag{25}$$

where $\hat{C}_d$ is the observed drain concentration. The tailwater coefficients used during the irrigation season of the modeled period are listed in Table 20 along with the irrigation recharge and concentration and tailwater adjusted drain flow and concentration for each period. The tailwater coefficients averaged 10 percent and were chosen to produce a smoothing of the sharp declines in drain concentration during the irrigation seasons as shown in Figure 52.

Finite Difference Representation and Programming Algorithm--

Using the parameters assigned in the previous section it is possible to perform a model simulation by assuming values for the regional inflow concentration (C_r) and the hydraulic conductivity ratio (K_1/K_2). The regional flow rate for each period may be computed using the water balance equation (13) in the finite difference form

$$q_{ri} = q_{di} - \epsilon_{Ii} + \frac{S_y}{\Delta t}(h_{1i} - h_{1i-1}) \tag{26}$$

where the subscript i denotes the period number and Δt is the simulation time increment (four week). As previously mentioned, the upper layer saturated thickness h_{1i} corresponds to the last week of period i, thus the storage term of (26) represents the change in storage due to inflow and outflow occurring in that period. The regional flow rates are now used to determine the

TABLE 20: Irrigation recharge and chloride concentration, tailwater adjusted drain flow and chloride concentration, and tailwater coefficients for each four week period.

Period No.	Irrigation Recharge ε_I(m/4wk)	Recharge Conc. C_I(meq/l)	Adj. Drain Flow q_d(m/4wk)	Adj. Drain Conc. C_d(meq/l)	Tailwater Coeff.
1	.0021	0	.0070	10.73	0
2	.0140	0	.0143	11.09	0
3	.0021	0	.0165	10.41	0
4	.0981	3.31	.0634	9.72	0
5	.1134	2.71	.0999	10.18	.10
6	.0872	2.02	.1457	9.89	.10
7	.1180	2.16	.1678	9.91	.10
8	.0963	2.78	.1497	9.18	.10
9	.1015	2.71	.0960	9.76	0
10	.1128	2.98	.0762	9.54	0
11	.1003	3.31	.0582	9.22	0
12	.0073	0	.0475	9.33	0
13	.0046	0	.0677	9.88	0
14	.0064	0	.0811	9.24	0
15	.0060	0	.0741	9.97	0
16	0	0	.0725	9.78	0
17	.1295	2.44	.1939	10.05	.05
18	.0509	2.36	.1932	9.31	.15
19	.1234	2.71	.2070	10.00	0
20	.1082	1.67	.1850	10.25	.10
21	.1042	2.87	.1905	10.07	0
22	.0920	2.16	.1658	9.97	0
23	.0674	1.89	.0723	10.31	0
24	.0710	2.31	.1195	10.66	0
25	.0064	0	.0527	9.84	0
26	.0054	0	.0463	10.53	0
27	.0034	0	.0369	10.91	0
28	.0110	0	.0314	9.28	0
29	0	0	.0341	11.66	0
30	.1207	2.98	.1137	10.10	0
31	.0363	2.60	.1512	8.96	.10
32	.1820	2.90	.2618	9.70	0
33	.1085	1.70	.2362	10.07	0
34	.1280	2.48	.1280	9.76	.10
35	.1082	1.84	.1137	9.97	0
36	.0497	2.22	.1143	8.78	.10
37	0	0	.0683	9.09	0
38	.0012	0	.0741	9.35	0
39	.0051	0	.0710	9.00	0

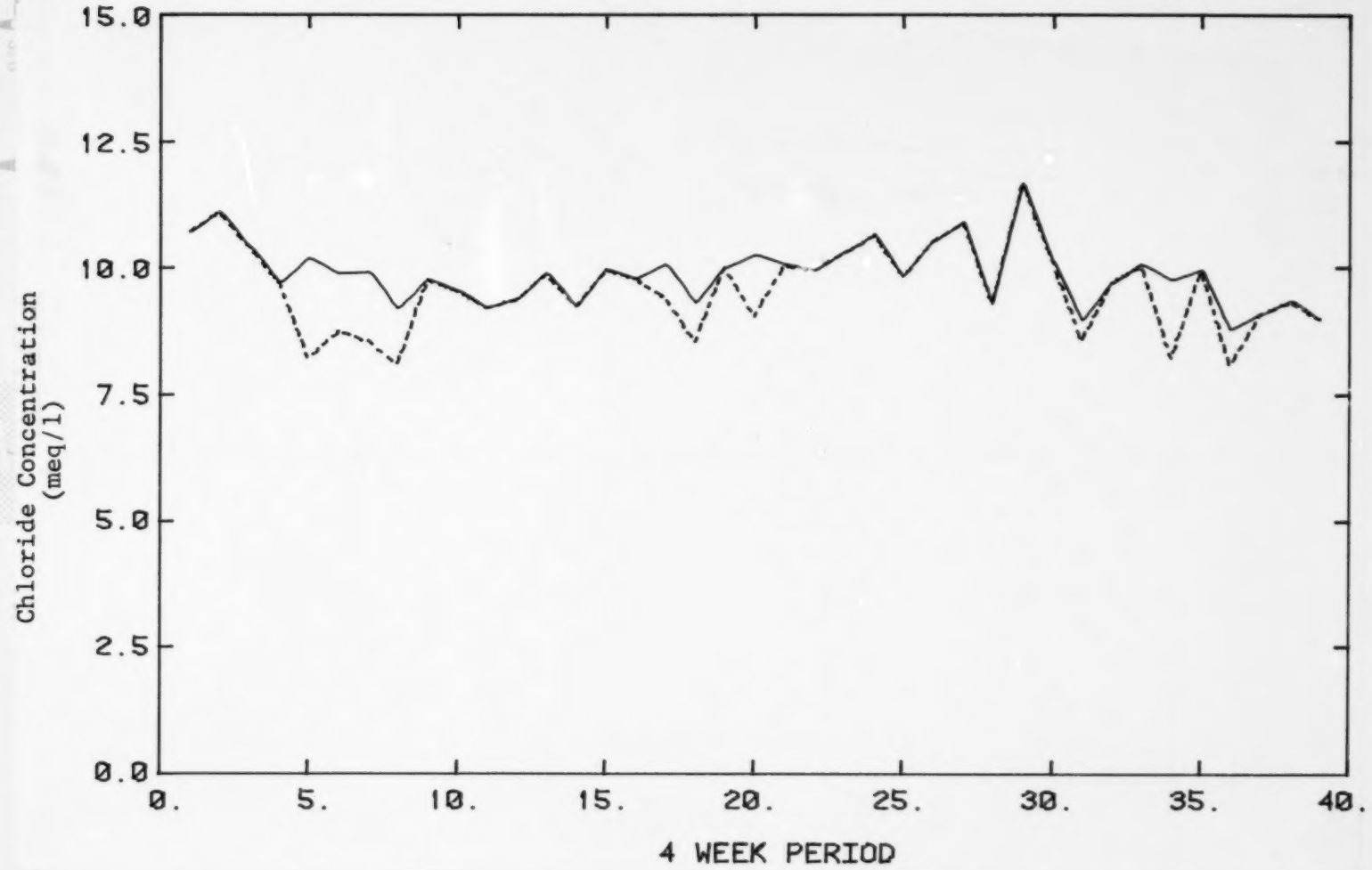

Figure 52. Observed (---) and tailwater adjusted (——) drain concentrations.

interlayer flow rates from equation (10) in the form

$$\varepsilon_{2i} = \frac{(K_2h_2/K_1\bar{h}_{1i})\ \varepsilon_{Ii}}{1 + K_2h_2/K_1\bar{h}_{1i}} - q_{ri} \qquad (27)$$

where

$$\bar{h}_{1i} = (h_{1i} + h_{1i-1})/2$$

is the average upper layer saturated thickness during period i.

All inputs to the mass balance equations (15) and (17) through (20) are now either calculated or assumed. For each period the directions (signs) of the regional and interlayer flow rates determine the appropriate mass balance equations to be solved for C_{1i} and C_{2i}. The finite difference representations of the mass balance equations for the three system states are given as follows: For $\varepsilon_{2i} > 0$

$$n_1 \frac{(h_{1i} + h_{1i-1})}{2}\frac{(C_{1i} - C_{1i-1})}{\Delta t} + (n_1 - S_y)\frac{(C_{1i} + C_{1i-1})}{2}\frac{(h_{1i} - h_{1i-1})}{\Delta t}$$

$$= \varepsilon_{Ii}\left[C_{Ii} - \frac{(C_{1i} + C_{1i-1})}{2}\right] \qquad (28)$$

if $q_{ri} > 0$ (system state (1))

$$n_2h_2\frac{(C_{2i} - C_{2i-1})}{\Delta t} = \varepsilon_{2i}\left[\frac{(C_{1i} + C_{1i-1})}{2} - \frac{(C_{2i} + C_{2i-1})}{2}\right]$$

$$+ q_{ri}\left[C_r - \frac{(C_{2i} + C_{2i-1})}{2}\right] \qquad (29)$$

if $q_{ri} < 0$ (system state (2))

$$n_2h_2\frac{(C_{2i} - C_{2i-1})}{\Delta t} = \varepsilon_{2i}\left[\frac{(C_{1i} + C_{1i-1})}{2} - \frac{(C_{2i} + C_{2i-1})}{2}\right] \qquad (30)$$

For $\varepsilon_{2i} < 0$ and $q_{ri} > 0$ (system state (3))

$$n_2 h_2 \frac{(C_{2i} - C_{2i-1})}{\Delta t} = q_{ri} \left[C_r - \frac{(C_{2i} + C_{2i-1})}{2} \right] \tag{31}$$

and

$$n_1 \frac{(h_{1i} + h_{1i-1})}{2} \frac{(C_{1i} - C_{1i-1})}{\Delta t} + (n_1 - S_y) \frac{(C_{1i} + C_{1i-1})}{2} \frac{(h_{1i} - h_{1i-1})}{\Delta t}$$

$$= \varepsilon_{Ii} \left[C_{Ii} - \frac{(C_{1i} + C_{1i-1})}{2} \right] - \varepsilon_{2i} \left[\frac{(C_{2i} + C_{2i-1})}{2} - \frac{(C_{1i} + C_{1i-1})}{2} \right] \tag{32}$$

The drain discharge rates from the layer are found from the water balance equations (11) and (12) in the forms

$$q_{d1i} = \varepsilon_{Ii} - \varepsilon_{2i} - \frac{S_y}{\Delta t} (h_{1i} - h_{1i-1}) \tag{33}$$

and

$$q_{d2i} = \varepsilon_{2i} + q_{ri} \tag{34}$$

The simulated drain concentration is then computed using equation (20) as

$$C'_{di} = \frac{q_{d1i}}{q_{di}} C_{1i} + \frac{q_{d2i}}{q_{di}} C_{2i} \tag{35}$$

where $q_{di} = q_{d1i} + q_{d1i}$.

The simulation is initialized by assuming the upper layer possesses an average chloride concentration of 9 meq/l, the average chloride concentration observed in a 6.1 m depth observation well during that period. The first period concentration of the lower layer is obtained by setting C'_{di} in (35) equal to the observed drain concentration for period one and solving for C_{21}. The result is a reproduction of the observed drain concentration for the first period.

The following algorithm describes the computational process of the model:

Read: effective porosities (n_1,n_2); specific yield (S_y); lower layer thickness (h_2); irrigation efficiency (μ); and, first period upper layer concentration (C_{11}).

Read for each period:
irrigation application amount ($\hat{q}_{Ii}$) and concentration ($\hat{C}_{Ii}$); measured drain flow rate ($\hat{q}_{di}$) and concentration ($\hat{C}_{di}$), upper layer saturated thickness (h_{1i}); regional inflow quality (C_{ri}); and, tailwater coefficient (η_i).

Compute for all periods:
tailwater adjusted drainflow (q_{di}) and concentration (C_{di}) using equations (24) and (25); irrigation recharge (ε_{ri}) and concentration (C_{Ii}) using equations (22) and (23); regional flow rate (q_{ri}) from (26); and, interlayer flow rate (ε_{2i}) from (27).

Compute C_{21} which reproduces the observed first period drain concentration using (35).

For periods 2 through 39:

If $\varepsilon_{2i} > 0$
solve (28) for upper layer concentration (C_{1i})
if $q_{ri} > 0$, solve (29) for lower layer concentration (C_{2i})
if $q_{ri} < 0$, solve (30) for lower layer concentration (C_{2i})

If $\varepsilon_{2i} < 0$
solve (31) for lower layer concentration (C_{2i})
solve (32) for upper layer concentration (C_{1i})

Compute upper layer outflow rate (qd_{1i}) from (33)
Compute lower layer outflow rate (qd_{2i}) from (34)
Compute predicted drain concentration (C'_{di}) from (35)

Simulation--

Several simulations were performed using various combinations of values for the conductivity ratio and regional inflow concentration. In the study by Senn, the optimal value for the unknown regional inflow concentration was 20.5 meq/l. More information about the regional flow quality can be obtained from deep observation wells. Based on the data from the deep wells DW50, DW65, DW54 and DW63 the chloride concentration of the regional inflow was taken to be in the range of 20 to 28 meq/l for the simulations.

The conductivity ratio embodies the effects of the shallow clay. Since the hydraulic properties and lateral extent of the clay are unknown, it is difficult to ascertain a reasonable range of values for this parameter. The conductivity ratio K_1/K_2 was assumed to be greater than unity due to the assignment of the shallow clay to the lower layer.

The most favorable results were obtained with a regional inflow concentration of 23 meq/l and a conductivity ratio of 10. Figure 53 is a plot of simulated and tailwater adjusted drain concentration histories for this run. The simulated regional and interlayer flow rates, layer concentrations, and drain concentration for each period are listed in Table 21. The simulation of higher than observed drain concentrations for periods 37, 38, and 39 may be due to inaccurate drain flow measurements. In October 1980 there appeared to be a downstream obstruction in the main drain causing unusually high stage readings at the middle drain recording station. This produced an overestimation of drain discharge for the last three periods and thus a greater simulated regional inflow rate due to the water balance assumptions. The high concentration of the regional inflow in turn caused high predicted drain concentrations.

Chloride mass output rates for the simulation were computed with and without the effect of tailwater. The simulated and observed mass outflow histories for the case of tailwater exclusion are shown in Figure 54. The inclusion of tailwater does not significantly change the mass outflow histories due to the much lower tailwater volume and concentration as compared to aquifer outflow volume and concentration.

Discussion

An important implication of this study is that the flow system is not one in which a simple flushing of high initial concentration groundwater occurs. Rather it is a dynamic system dominated by regional inflow. Following is a comparison of yearly regional inflow and surficial recharge rates obtained from the transient model simulation:

Year	Regional Inflow (m/yr)	Irrigation and Precipitation Recharge (m/yr)
1978	0.30	0.86
1979	0.86	0.77
1980	0.63	0.75

Based on these figures, regional inflow constitutes roughly 43 percent of the total inflow to the system during the three year period. The regional inflow of 1978 may not be indicative of a

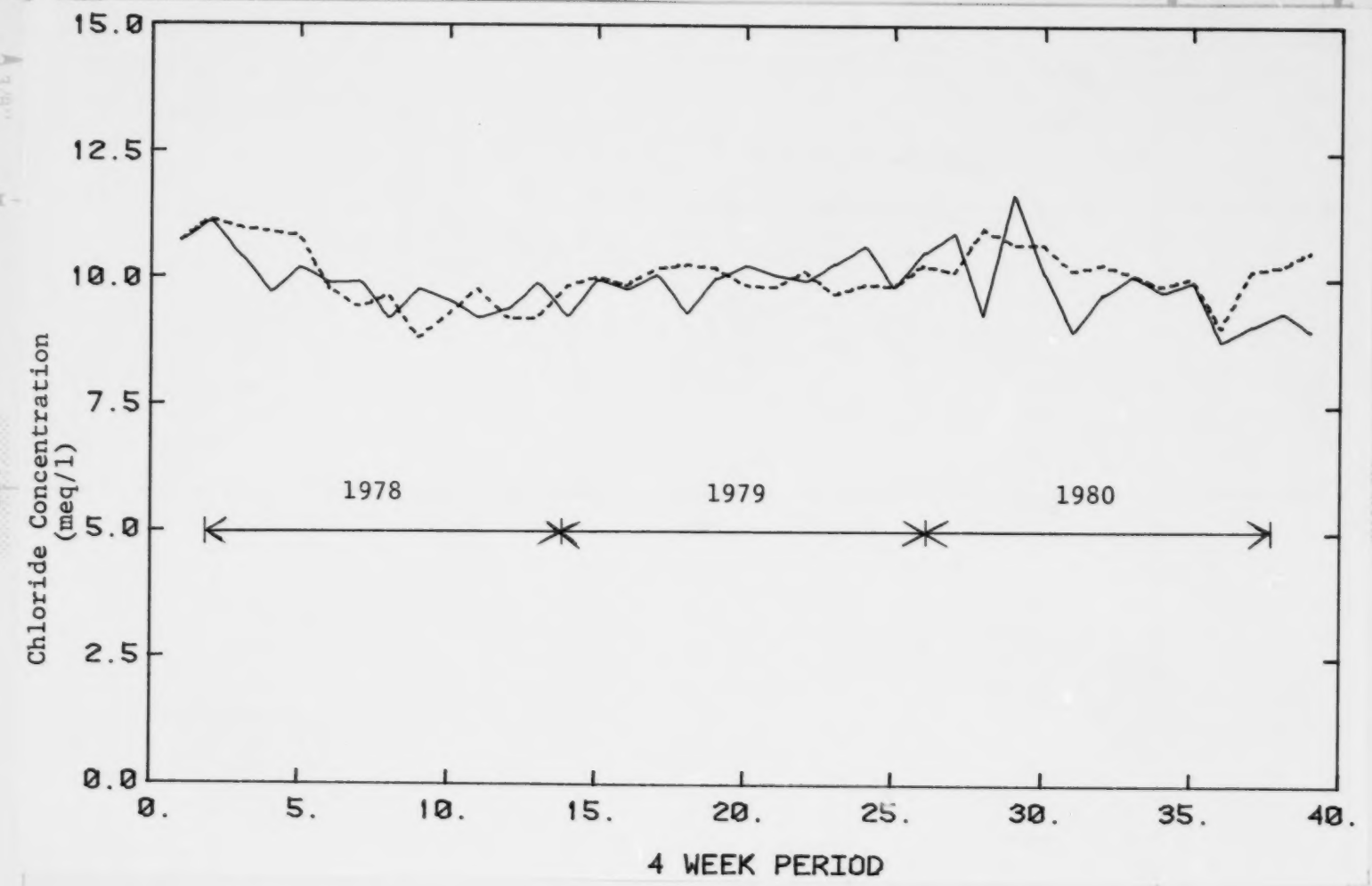

Figure 53. Simulated (---) and tailwater adjusted (——) drain concentrations.

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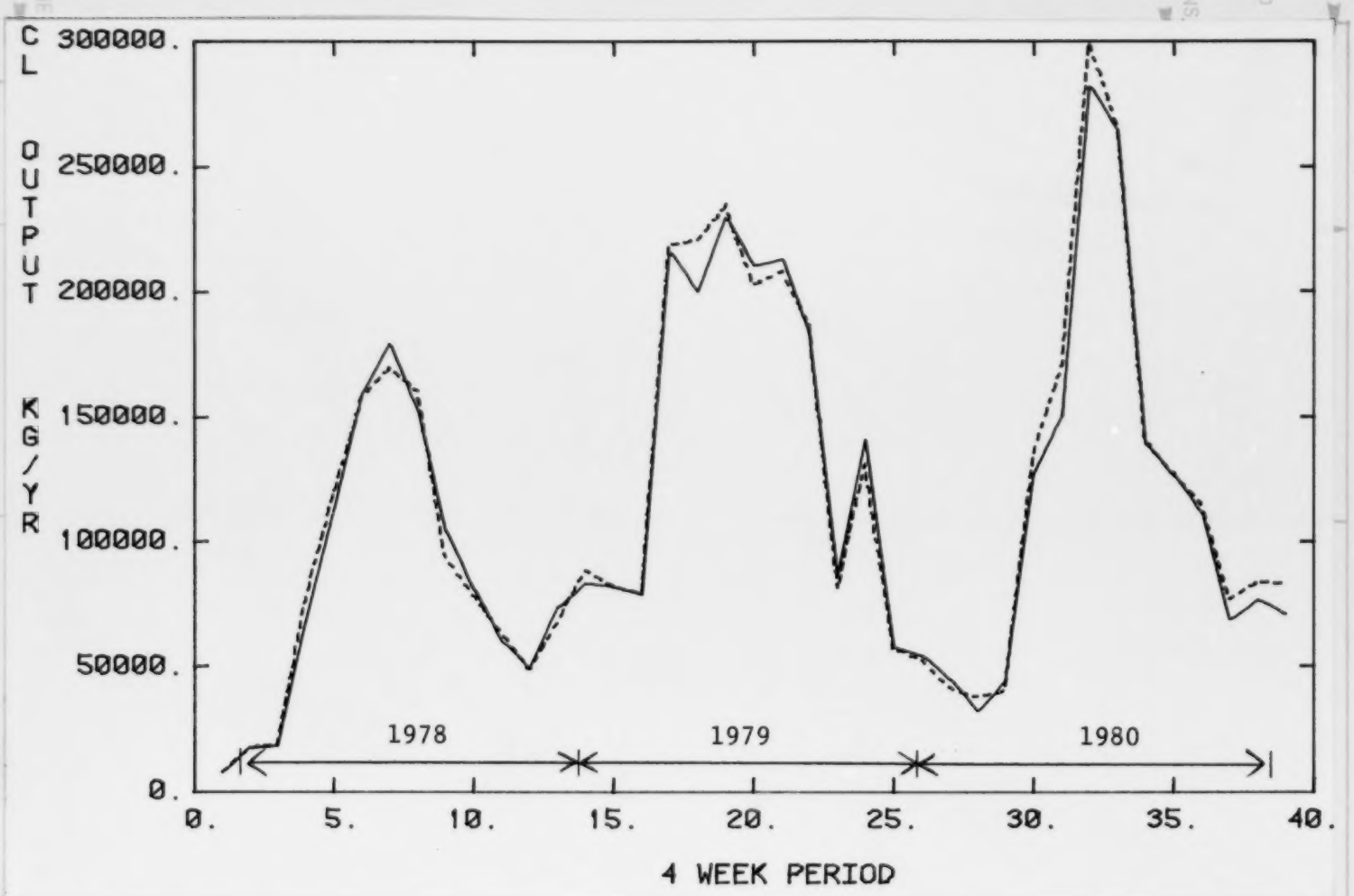

Figure 54. Simulated (---) and observed (——) mass outflow rates without tailwater effects

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TABLE 21. Simulated regional and interlayer flow rates, layer chloride concentrations, and drain chloride concentrations.

Period No.	Regional Flow q_r(m/4wk)	Layer Interflow ε_2(m/4wk)	Layer Concentrations Upper C_1(meq/l)	Lower C_2(meq/l)	Drain Conc. C'_d(meq/l)
1	.0049	-.0037	9.00	18.05	10.73
2	.0043	-.0006	8.92	18.05	11.16
3	.0171	-.0134	8.95	18.08	10.98
4	-.0155	.0311	8.58	18.01	10.90
5	.0372	-.0348	8.07	18.05	10.82
6	.0579	-.0030	7.98	18.12	9.78
7	.0229	.0024	7.78	18.14	9.40
8	.0588	-.0308	7.68	18.21	9.66
9	-.0421	.0530	7.62	18.07	8.81
10	-.0396	.0533	7.39	17.94	9.30
11	-.0705	.0366	7.11	17.84	9.78
12	.0402	-.0317	7.25	17.89	9.21
13	.0549	-.0439	7.49	17.96	9.19
14	.0829	-.0664	7.75	18.06	9.85
15	.0750	-.0600	7.98	18.15	10.04
16	.0625	-.0509	8.27	18.22	9.85
17	.0942	-.0533	8.03	18.33	10.20
18	.1506	-.1146	8.39	18.50	10.28
19	.0951	-.0561	8.28	18.60	10.21
20	.0607	-.0304	8.18	18.67	9.88
21	.0589	-.0293	8.20	18.73	9.84
22	.0768	-.0457	8.15	18.81	10.15
23	-.0024	.0143	8.01	18.77	9.72
24	.0442	-.0229	7.96	18.82	9.90
25	.0393	-.0308	8.13	18.86	9.87
26	.0415	-.0326	8.27	18.90	10.28
27	.0293	-.0232	8.40	18.93	10.13
28	.0299	-.0223	8.42	18.96	10.99
29	.0378	-.0308	8.55	18.99	10.70
30	.0283	-.0012	8.08	19.02	10.69
31	.1003	-.0756	8.43	19.12	10.18
32	.1042	-.0727	8.12	19.21	10.31
33	.1140	-.0741	8.25	19.32	10.12
34	-.0064	.0283	7.95	19.24	9.89
35	.0268	-.0024	7.57	19.26	10.06
36	.0247	-.0110	7.69	19.29	9.06
37	.0719	-.0588	7.99	19.35	10.19
38	.0704	-.0573	8.30	19.41	10.28
39	.0655	-.0527	8.55	19.47	10.55

typical year due to the dry conditions prevalent in the Rio Grande valley during 1977. Assuming the conditions during 1979 and 1980 are representative of most years, the average regional inflow and surface recharge rates could be considered as equivalent. Most of the inflow to the system is conveyed through the more transmissive upper layer as indicated by the frequency of negative simulated interlayer flow rates. The lower layer, receiving little input from the upper layer, maintains a high concentration due to the regional inflow. Upper layer concentrations are higher than irrigation recharge concentrations due to inflow from the lower layer.

As indicated by the results of this study, the lumped parameter model may be used to simulate a complex transient groundwater system. The simple conceptual base and ease of generalization make the model a versatile investigative tool. The model presented here has limited predictive capability due to the required input of the transient drain flow. However, it does provide estimates of important parameters and a possible description of the middle drain flow system.

USBR-EPA HYDROSALINITY MODEL

Background

The U.S. Bureau of Reclamation water quality model (Shaffer et al, 1977) is capable of modeling an irrigated aquifer from the soil surface to a tile or open drain. In general, the model consists of seven modules: Irrigation Scheduling, Unsaturated Flow, Unsaturated Chemistry, Saturated Flow, Saturated Chemistry, Drainout, and Drain Effluent Prediction. The Irrigation Scheduling module performs several functions including simulation of irrigation and precipitation amounts and timing, calculation of evapotranspiration, and determination of deep percolation water volumes. The Unsaturated Flow module simulates one dimensional unsaturated flow between the soil surface and water table including infiltration, redistribution, plant root extraction, and drainage of soil water under a growing crop. The Unsaturated Chemistry module models important biological and chemical reactions in the unsaturated zone. The Saturated Flow module simulates the average or steady-state response of a drainage system to deep percolation inputs, and the Drainout module predicts the transient response of a drainage system to deep percolation inputs. The Saturated Chemistry module handles the chemistry of the saturated soil-water system and salt movement across the base of the aquifer. Finally, the Drain Effluent Prediction module combines the outputs of the Drainout, Saturated Flow, and Saturated Chemistry modules to simulate solute concentrations in the drains.

The model versatility allows simulation of only the desired irrigation system components by using the appropriate modules. A model version bypassing the unsaturated zone simulation modules was used for sensitivity analysis and preliminary simulations of the middle drain flow system for the period 1950 through 1978 by Simonett (in Gelhar et al., 1980, pp. 49-66). The flow modules of the U.S. Bureau of Reclamation model assume the aquifer is homogeneous, isotropic, and receives surficial recharge only. Therefore, a separate finite element flow model was used in this study to simulate steady-state flow in the layered farm aquifer including both regional and irrigation inflow components. The simulated potential distribution will be used to construct a flow net from which stream tube pore volumes and travel times were determined for the tubes conveying irrigation recharge. This information is required by the Saturated Chemistry and Drain Effluent Prediction programs which are used to simulate outflow concentrations of the irrigated flow system defined by these stream tubes. Drain concentrations are simulated by mixing the outflow of the irrigation system with the outflow of the regional flow system defined by the remaining stream tubes.

The Flow Model

In order to simulate the flow in the layered aquifer system at the San Acacia site a finite element numerical model was developed. This model treats steady saturated flow in a heterogeneous anisotropic vertical section using the Galkerin finite element method; the details of the development are available in Simonett (1981).

The model was applied to the vertical section in which flow is perpendicular to the middle drain. This section, defined by a line normal to both the water table divide and middle drain, is roughly 244 m in length as measured on the north side of the middle drain. A value of 3.1 m was assigned to the road width and half-width of the drain.

The average amount of irrigation and precipitation water received by the system from 1978 through 1981 is 1.77 m per year. Assuming half of this amount becomes recharge, a steady-state irrigation recharge rate of 0.88 m per year was used in the model. The regional recharge rate was assumed equal to the surface recharge rate based on the results of the transient lumped parameter model discussed previously. This flux was imposed at the lower boundary over the entire length of the model.

Using the surface of the deeper clay as a datum, the drain water surface elevation was taken at about 19.5 m. The shallow clay is assumed to be continuous throughout the aquifer area, composing the interval from 10.1 to 13.1 m above the deeper clay. The aquifer is thus divided into three layers: an upper layer of

mostly sand; a middle clay layer; and, a lower layer consisting predominantly of sand and gravel.

There were no direct measurements of the clay or lower layer hydraulic conductivities so that these were estimated relative to the upper layer conductivity. Laboratory measurements of the hydraulic conductivity of 14 small cores collected from the upper part of the upper layer gave an average of 24.4 m/day. Based on grain size information (Figures 41 and 45) the conductivity of the lower layer was estimated to be one half of that of the upper layer. A small anisotropy ratio of $K_1/K_2 = 2.25$ was assumed in the model. The clay was assumed to possess 1/20th of the upper layer conductivity and anisotropy equivalent to the other layers. In accordance with the conductivities and anisotropy ratios assumed, the layer conductivities used in the model are as follows:

	Horizontal	Vertical
Layer	K_x(m/day)	K_y(m/day)
upper	54.9	24.4
clay	2.74	1.22
lower	27.4	12.2

When used in the model, these conductivity values produced a water table elevation difference of about 0.27m between the divide and drain. A difference in water table elevation of 0.3 m was indicated by the water level in a shallow well near the divide and an elevation of the drain water surface late in the summer of 1980. Although the measured surcharge may not be indicative of a steady-state condition, its proximity to the simulated surcharge suggests that the assumed conductivities produce a total transmissivity representative of the aquifer.

The discretization of the flow system incorporated 450 nodes and 812 elements. The rectangular nodal mesh consisted of 30 columns of 15 nodes arranged to produce a tight spacing near the drain. The nodal coordinates and corresponding simulated head values were used in a contouring subroutine to produce an equivalent isotropic scale model of the flow system with a hydraulic potential contour interval of 0.003 m. Streamlines were then drawn on the model to produce a total of 18 stream tubes - 9 conveying equal amounts of irrigation recharge and 9 conveying equal amounts of regional recharge. A reproduction of this flow net is shown in Figure 55. The irrigation stream tube travel times and pore volumes required by the Bureau of Reclamation model were determined using the flow net. The upper layer effective porosity of 0.35 was used in the calculations of travel times along the nine streamlines defining the irrigation stream tubes. Each stream tube travel time was taken as the average of the bounding streamline travel times. The pore volume of each tube is found by multiplying the travel time by the

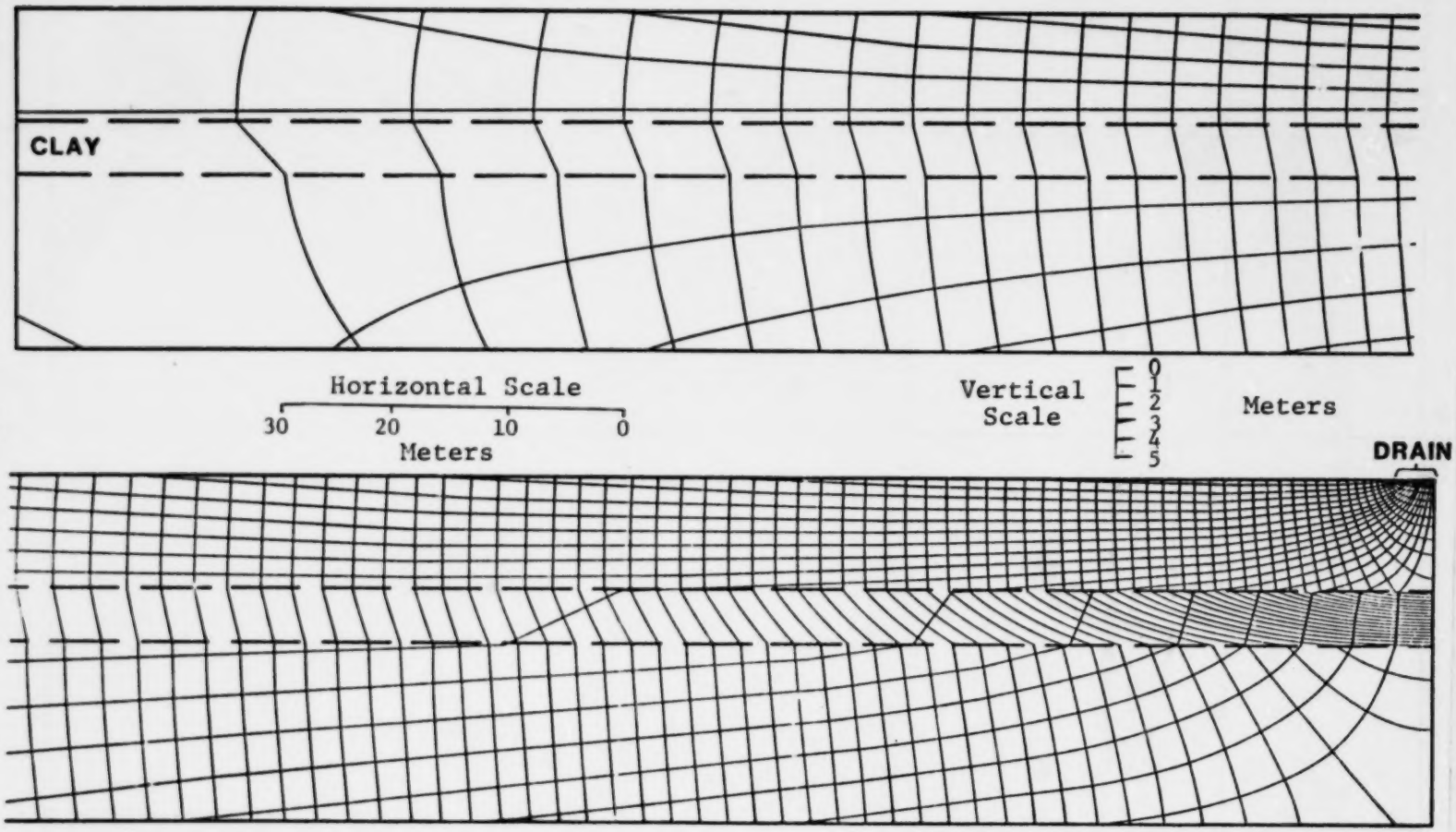

Figure 55. Simulated steady-state flow net.

volumetric recharge rate. The travel times and pore volumes of the irrigation stream tubes are given in Table 22.

TABLE 22. Irrigation stream tube travel times and pore volumes.

Stream Tube*	Travel Time (yrs.)	Pore Volume(m^3/m drain)
1	.098	2.29
2	.333	7.77
3	.641	14.97
4	1.018	23.76
5	1.479	34.53
6	2.066	48.24
7	2.864	66.87
8	4.159	97.10
9	8.985	209.80

*Stream tubes are numbered starting nearest to the drain.

Steady-State Simulation--

The 31 year period of 1950 through 1980 was considered in the steady-state simulations. The Saturated Chemistry and Drain Effluent Prediction programs were used to simulate the irrigation system as defined by the upper nine irrigation stream tubes. Yearly average drain concentrations were simulated by flow weighting the Drain Effluent Prediction program concentrations with the regional inflow concentrations according to

$$C_d = (Q_I C + Q_r C_r)/(Q_I + Q_r)$$

where Q_I = (237.8m) = 210 m /m drain/year, the volumetric-irrigation recharge rate;
$Q_r = q_r(244m)$ = 216 m /m drain/year, the volumetric-regional recharge rate;
C = simulated yearly average irrigation system outflow concentration; and,
C_r = regional inflow concentration.

The regional inflow is assumed to possess the average concentrations observed in the wells DW50, DW65, and DW54.

Three model runs were performed to assess the importance of soil-water chemical reactions and the effect of differing initial soil analyses or groundwater compositions. Inputs to the Saturated Chemistry and Drain Effluent Prediction programs for these runs are listed in Table 23. The initial groundwater condition for run 1 was obtained from the analyses of soil

TABLE 23. Steady-state model input data.

Saturated Chemistry Program Inputs

Deep Percolation Data

Number of water applications per year	1
Date of application	1-18
Amount of applied water	1.96 m
Irrigation efficiency	0.55

Irrigation water analyses

Annual average concentrations for NO_3, Ca, Mg, NH_4, CO_3, Na, HCO_3, Cl and SO_4 obtained for the period 1950 through 1980 as follows:

- 1950-1956 - from analyses of Rio Grande at San Acacia in USGS Water Supply Papers
- 1957-1976 - regressed from analyses of Rio Grande conveyance channel at San Marcial in USGS Water Supply Papers
- 1977-1980 - analyses of irrigation water sampled at farm.

Stream Tube Data

Stream tube pore volumes	listed in Table 21
Width of each tube at water table	26.4m
Volumetric moisture content at saturation	0.35
Number of divisions of each tube	10

Soil Analysis Data

	Run 1	Run 2*
Constituent	Initial soil conc.	(meq/l)
Ca	17.8	11.3
Mg	5.2	5.0
Na	22.0	24.2
NH_4	0	0
Cl	16.7	21.6
SO_4	26.2	16.2
HCO_3	3.5	3.4
CO_3	0.07	0.07
NO_3	0.02	0.02

*Regional inflow concentrations are identical to initial soil concentrations of Run 2.

(Continued)

TABLE 23 (Continued).

Soil Analysis Data (Cont.)

	Run 1	Run 2
Calcareous soil indicator	on	on
Gypseous soil indicator	off	off
Dry bulk density (g/cc)	1.72	1.72
Soil extract	0.2035	0.2035
Cation exchange capacity (meq/100g)	5.13	5.13
Partial pressure CO_2 (atm)	0.012	0.012

Drain Effluent Prediction Program Inputs

Monthly drain discharge (m/month)		0.0737
Stream tube travel times	listed in Table 21	

Other inputs obtained from Saturated Chemistry program output.

samples from the borehole augered near the middle drain in 1979. The soil analysis concentrations were over the depth based on samples collected at 0.3 m intervals in borehole S2(at DW54) averaged over the interval of 9.1 to 20.4 m, the zone assigned to the lower layer, and these averages were used to compute the initial groundwater concentrations assuming a lower layer porosity of 0.30. Run 2 was made using the average deep well (regional inflow) concentrations as the initial groundwater condition. To incorporate these initial conditions in the model, the groundwater concentrations are input as soil analysis concentrations along with a soil extract corresponding to saturation. Run 3 is identical to run 1 with the exception that the soil-water chemical reaction calculations in the Saturated Chemistry program were bypassed.

The simulated drain concentration histories for calcium, sodium, sulfate, bicarbonate, chloride and total dissolved solids (TDS) obtained from runs 1 and 2 with differing initial conditions are shown in Figure 56. The difference in initial conditions has no effect on simulated drain concentrations of the conservative constituents, chloride and sulfate, after complete displacement of the irrigation stream tubes in 1958. Simulated drain concentrations of the nonconservative constituents, calcium, sodium and bicarbonate, for the two runs display only minor differences after 1958.

Figure 57 shows plots of simulated drain calcium, sodium, bicarbonate and TDS concentrations from runs 1 and 3. Simulated sodium concentrations increase and calcium and bicarbonate concentrations decrease with the inclusion of soil-water chemical reactions, possibly indicating replacement of sodium by calcium on the matrix surface and precipitation of calcium carbonate. The lower simulated TDS concentrations of the run including reactions is attributed mostly to the decrease in calcium and bicarbonate concentrations.

Transient Simulation--

The Saturated Chemistry and Drain Effluent Prediction programs are used here to simulate the transient irrigation system for the period of January 1978 through October 1981 using a monthly time increment. Drain concentrations are simulated by flow weighting the irrigation system outflow concentrations with regional inflow of the same constant magnitude and quality used in the steady-state simulation. The irrigation stream tube travel times and pore volumes obtained from the steady-state flow model are assumed to apply to the transient flow system as well.

Transient simulations were performed with and without the inclusion of soil-water chemical reactions. The inputs to the Saturated Chemistry and Drain Effluent Prediction programs used in the simulations are listed in Tables 24 and 25. The Deep Percolation Data is identical to that used in the transient

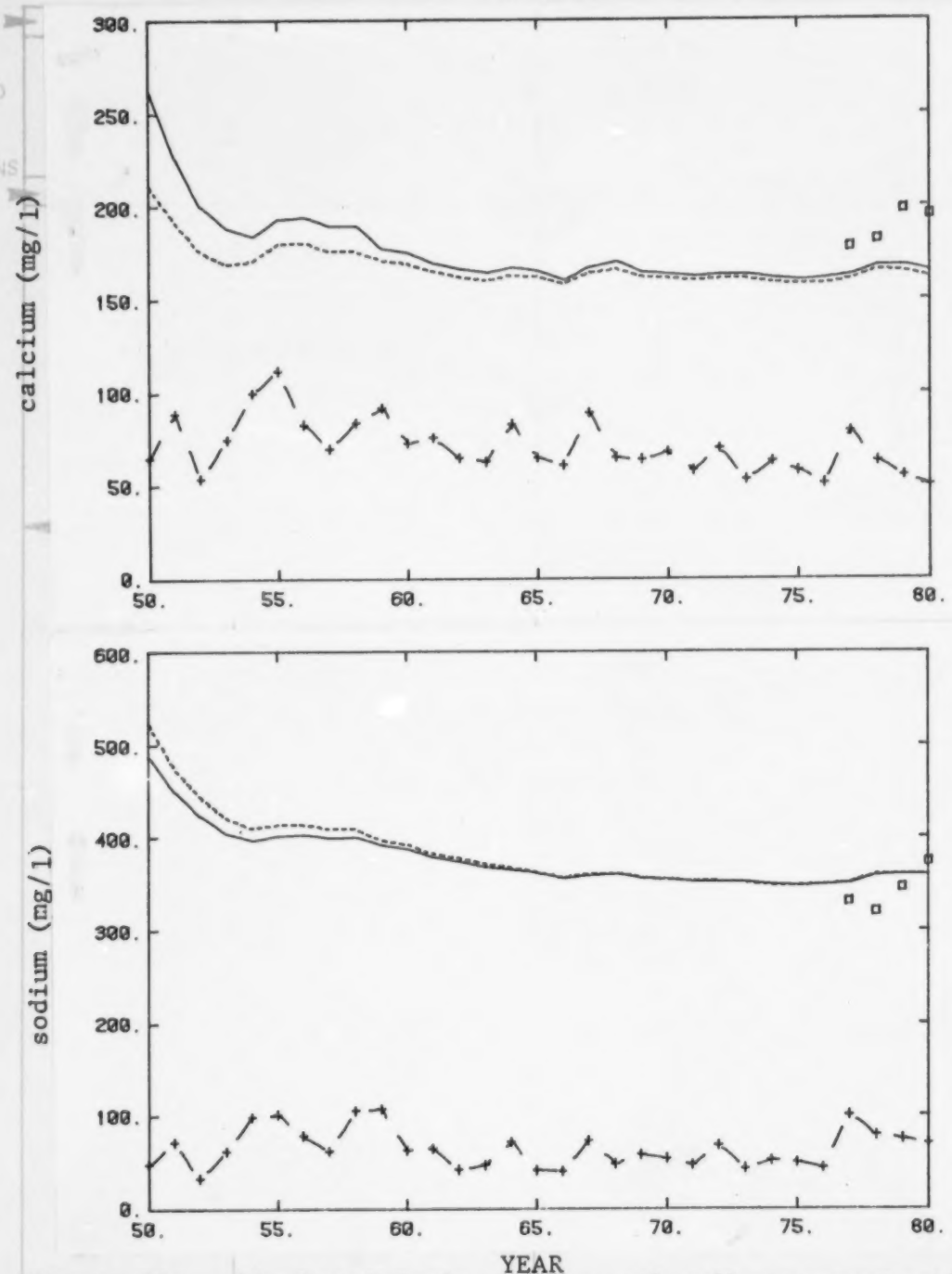

Figure 56a. Simulated drain calcium and sodium concentrations for soil analysis (—) and deep well concentrations (---) initial conditions; observed drain concentrations (□); and, irrigation water concentrations (-+-).

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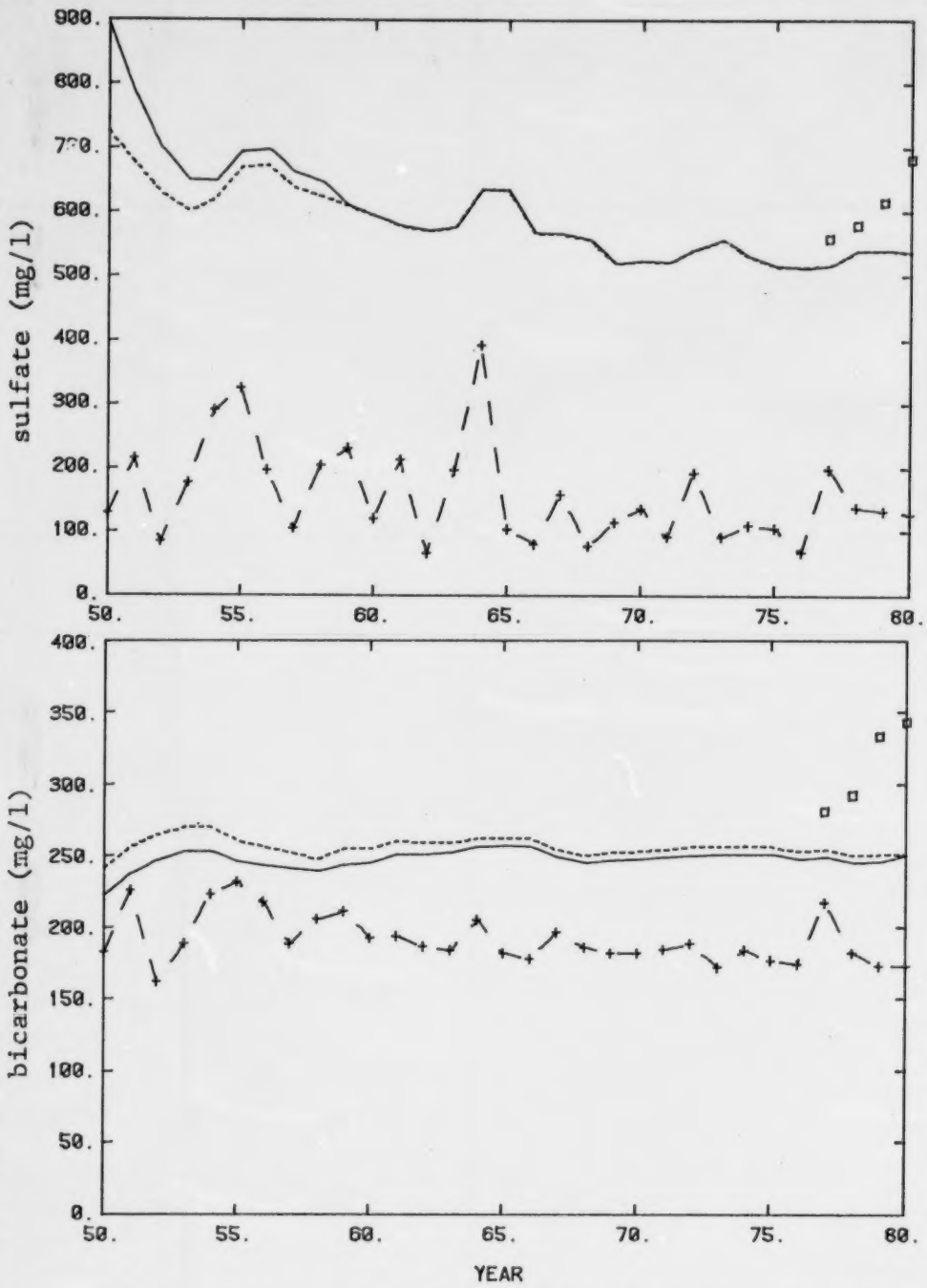

Figure 56b. Simulated drain sulfate and bicarbonate concentrations for soil analysis (—) and deep well concentrations (---) initial conditions; observed drain concentrations (□); and, irrigation water concentration (-+-).

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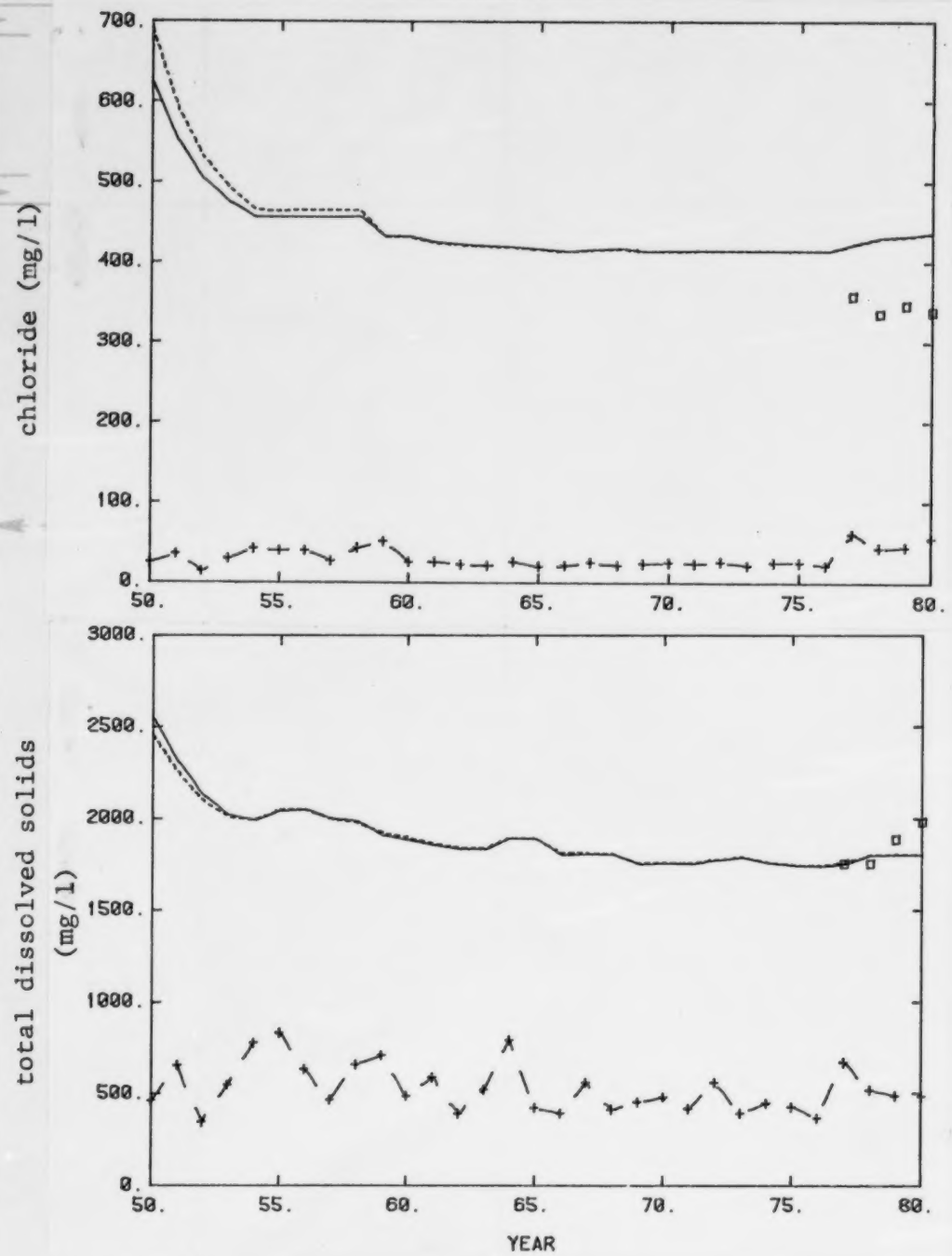

Figure 56c. Simulated drain chloride and TDS concentrations for soil analysis (—) and deep well concentrations (---) initial conditions; observed drain concentrations (□); and, irrigation water concentrations (-+-).

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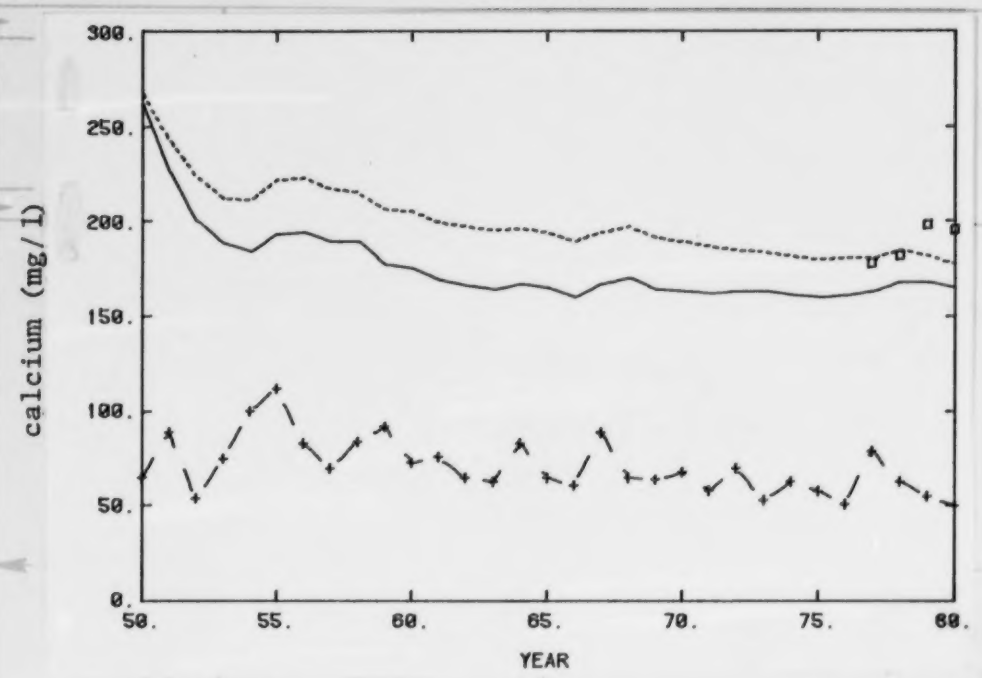

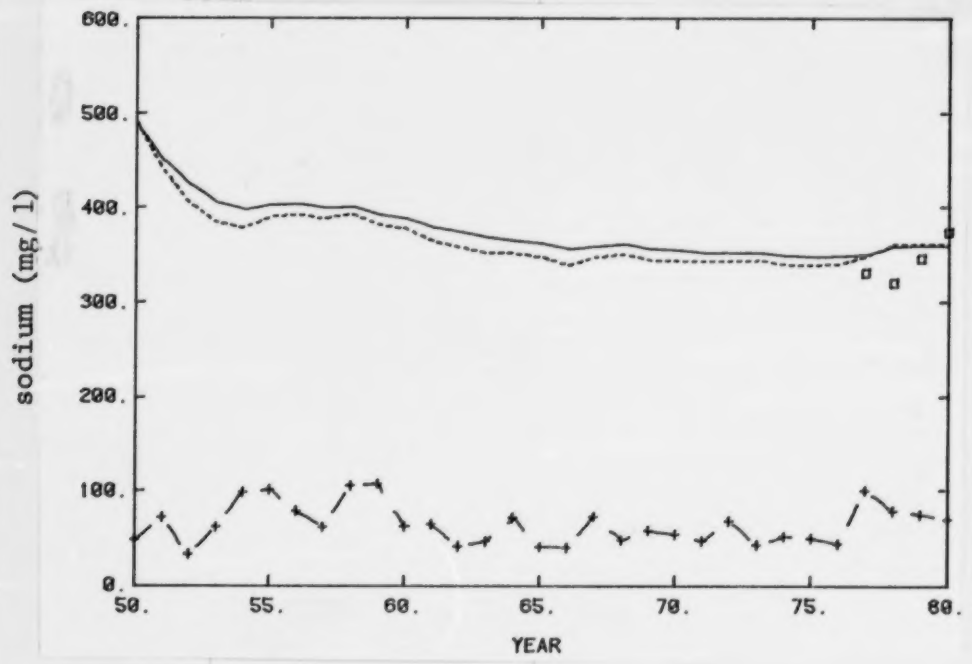

Figure 57a. Simulated drain calcium and sodium concentrations with (—) and without (---) chemical reactions; observed drain concentrations (□); and, irrigation water concentration (-+-).

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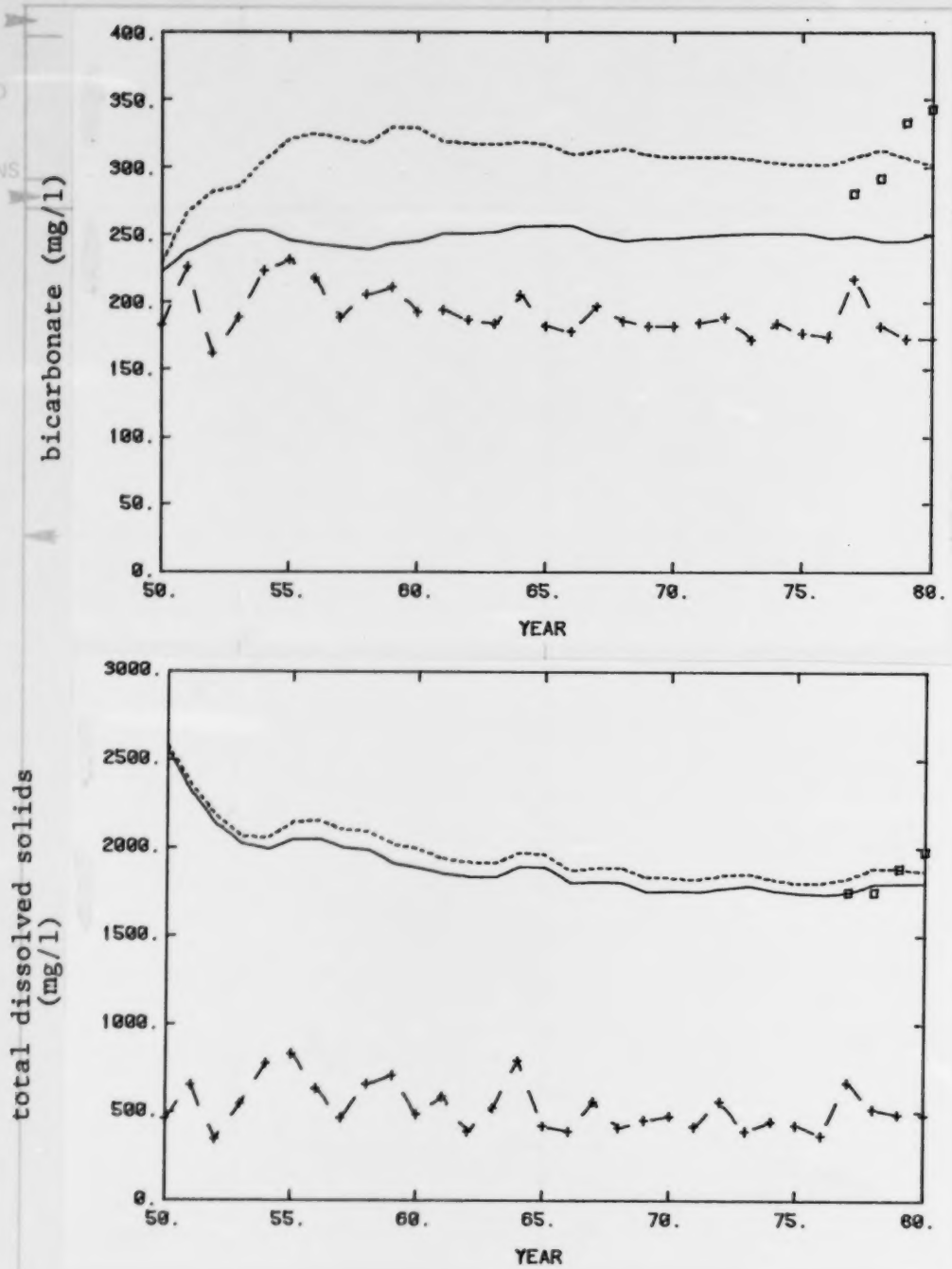

Figure 57b. Simulated drain bicarbonate and TDS concentrations with (—) and without (---) chemical reactions; observed drain concentrations (□); and, irrigation water concentration (-+-).

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TABLE 24. Transient model input data.

Saturated Chemistry Program Inputs

Deep Percolation Data

	1978	1979	1980	1981
Number of applications /yr	13	12	11	10
Amount of applied water (m)	2.01	1.77	1.55	1.82
Irrigation efficiency	0.55	0.55	0.50	0.49
Specific application data (dates, amounts, chemcial analyses)	See Table 24.			

Stream Tube Data

Stream tube pore volumes	Listed in Table 21.
Width of each tube at water table	26.4 m
Volumetric water content at saturation	0.35
Number of divisions of each tube	24

Soil Analysis Data

Initial soil concentrations (meq/l)

Ca	Mg	Na	NH_4	Cl	SO_4	HCO_3	CO_3	NO_3
6.8	1.3	12.4	0	4.4	14.2	1.9	0.07	0.02

Calcareous soil indicator	on
Gypseous soil indicator	off
Dry bulk density (g/cm^3)	1.72
Soil extract*	0.230
Cation exchange capacity (meq/100g)	3.76
Partial pressure CO_2 (atm)	0.012

*soil extract is: $\frac{\text{volume of water added to air dry sample}}{\text{volume of sample}}$

(Continued)

TABLE 24.(Continued).

Drain Effluent Prediction Program Inputs

Monthly drain discharge data

	Drain discharge (vector m/vector/month)			
Month	1978	1979	1980	1981
1	.002	.006	.003	.003
2	.014	.006	.011	.001
3	.002	0	0	.121
4	.098	.136	.121	.003
5	.126	.060	.041	.121
6	.097	.123	.182	.044
7	.238	.225	.251	.266
8	.101	.092	.018	.109
9	.113	.067	.055	.037
10	.100	.071	0	.014
11	.007	.006	.001	
12	.005	.005	.005	

Stream tube pore volumes Listed in Table 21

Other inputs obtained from Saturated Chemistry program output.

TABLE 25. Irrigation water data.

Date	Depth (m)	Concentration (meq/l)						
		Ca	Mg	Na	HCO_3	CO_3	Cl	SO_4
1-14-78	.005				-0-			
2-10-78	.031				-0-			
3-10-78	.005				-0-			
4-7-78	.278	3.06	0.97	3.72	3.10	0.40	1.49	3.20
5-5-78	.280	3.22	1.03	3.87	2.11	1.22	1.22	3.44
6-1-78	.215	2.46	0.77	2.65	2.20	0.22	0.91	1.83
7-1-78	.291	2.23	0.67	2.03	2.36	0	0.97	1.21
7-28-78	.238	3.78	1.22	4.32	3.60	0.30	1.25	4.27
8-25-78	.226	3.51	1.09	3.95	3.82	0	1.22	3.43
9-22-78	.251	3.27	1.05	3.25	3.15	0.43	1.34	3.18
10-20-78	.223	2.99	0.87	3.76	2.92	0.69	1.49	2.78
11-17-78	.016				-0-			
12-15-78	.010				-0-			
1-12-79	.014				-0-			
2-9-79	.014				-0-			
4-6-79	.303	2.32	0.71	2.94	2.96	0	1.10	2.27
5-4-79	.133	1.68	0.56	2.51	1.99	0	1.06	1.43
6-1-79	.274	2.26	0.71	3.00	2.58	0	1.22	2.39
7-1-79	.267	2.16	0.64	3.01	3.52	0	0.75	1.86
7-27-79	.232	1.95	0.57	2.41	2.40	0	1.29	1.80
8-24-79	.205	2.54	0.78	2.67	2.40	0	0.97	3.45
9-21-79	.150	2.98	0.84	2.59	1.19	0	0.85	2.82
10-19-79	.158	2.81	0.85	2.76	3.36	0	1.04	2.54
11-16-79	.014				-0-			
12-14-79	.011				-0-			
1-11-80	.006				-0-			
2-8-80	.022				-0-			
4-4-80	.241	3.02	0.92	3.47	2.96	0	1.49	2.99
5-2-80	.081	1.80	0.64	2.36	1.73	0	1.30	2.16
6-1-80	.364	1.62	0.54	1.92	2.07	0	1.45	1.53
7-1-80	.217	2.04	0.62	2.42	2.46	0	0.85	2.04
7-25-80	.284	2.74	0.82	3.37	3.37	0	1.24	2.88
8-22-80	.216	2.14	0.89	3.10	2.42	0	0.92	2.46
9-19-80	.111	1.58	0.66	2.30	1.80	0	1.11	1.83
11-14-80	.000				-0-			
12-12-80	.010				-0-			

*Nitrate concentrations ranged from 0.01 to 0.06 meq/l, ammonium concentrations assumed zero.

(Continued)

TABLE 25.(Continued).

Date	Depth (m)	Concentration (meq/l)						
		Ca	Mg	Na	HCO_3	CO_3	Cl	SO_4
1-14-81	.006				-0-			
2-18-81	.002				-0-			
3-18-81	.238	2.31	0.81	3.08	2.60	0.0	1.37	2.46
4-15-81	.007				-0-			
5-13-81	.237	3.11	0.93	3.53	3.10	0.0	1.60	3.11
6-17-81	.685	3.43	1.19	5.21	3.22	0.11	1.99	4.69
7-15-81	.522	2.91	1.01	4.75	2.58	0.0	1.70	4.46
8-12-81	.021				-0-			
9-16-81	.035	2.70	0.83	3.57	2.61	0.0	1.84	2.56
10-14-81	.028				-0-			

lumped parameter model simulation, with the irrigation application dates taken as the midpoint of each four week period. The Soil Analysis Data used for the initial condition represents the analyses of soil samples from the middle drain borehole (S2 at DW54) averaged over the depth interval of 2.1 to 7.3m. The monthly irrigation system outflows required by the Drain Effluent Prediction program are assumed equivalent to the amount of irrigation recharge occurring in each month.

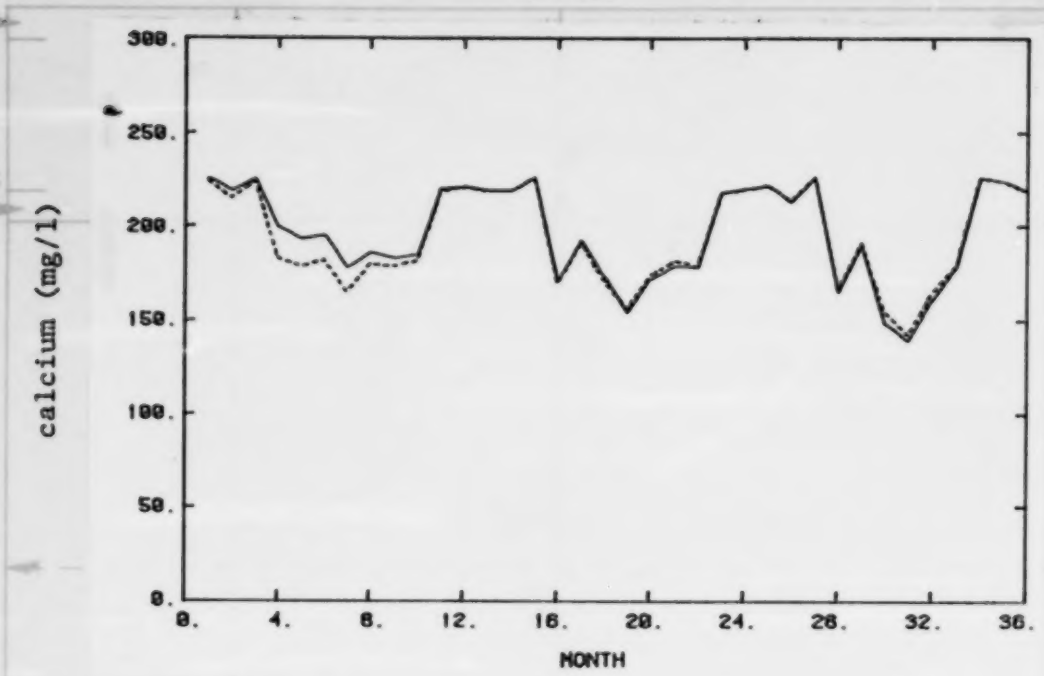
The effect of including chemical reations on simulated drain calcium, sodium, bicarbonate and TDS concentrations was investigated for the period of January, 1978, through October, 1980. The results are shown in Figure 58. The inclusion of reactions produces minor increases in simulated TDS concentrations due mostly to calcium, sodium and bicarbonate concentration increases. Preliminary testing was also done on the effect of chemical reaction in the soil zone; the effect of the soil zone was found to be very small, as would be expected in view of its small pore volume compared with the aquifer.

Drain calcium, sodium, sulfate, bicarbonate, chloride and TDS concentration histories simulated with reactions included are plotted with observed drain concentrations in Figure 59. In general, simulated drain concentrations display better agreement during irrigation seasons than during the winter months. This trend is also seen in the simulated mass output histories for these six constituents as shown in Figure 60. The winter months disagreement is due to the assumption that drain flow is composed mostly of high concentration regional inflow during the months of little surficial recharge. Regional flow was assumed to enter the aquifer through the base and flow to the drain without any change in concentration. In reality, regional flow probably mixes with and/or displaces some of the resident irrigation recharge in the upper layer during the winter. Thus during winter months, drain flow most likely consists of a mixture of regional inflow quality from the lower layer and resident irrigation recharge quality from the upper layer. The relative magnitudes of the drain flow components would be dictated by the transmissivities of the layers.

To simulate this effect on the regional inflow during the winter months the aquifer will be considered to function as the two layered system defined in the transient lumped parameter model application. The drain concentration for this system is calculated by flow weighting the outflow concentrations of the two layers according to

$$C_d = (T_1 q_r C_1 + T_2 q_r C_2)/(T_1 q_r + T_2 q_r)$$

where T_1 and T_2 are the upper and lower layer transmissivities, C_1 and C_2 are the concentrations in the upper and lower layers, and q_r is the regional inflow rate. Recalling the upper to lower



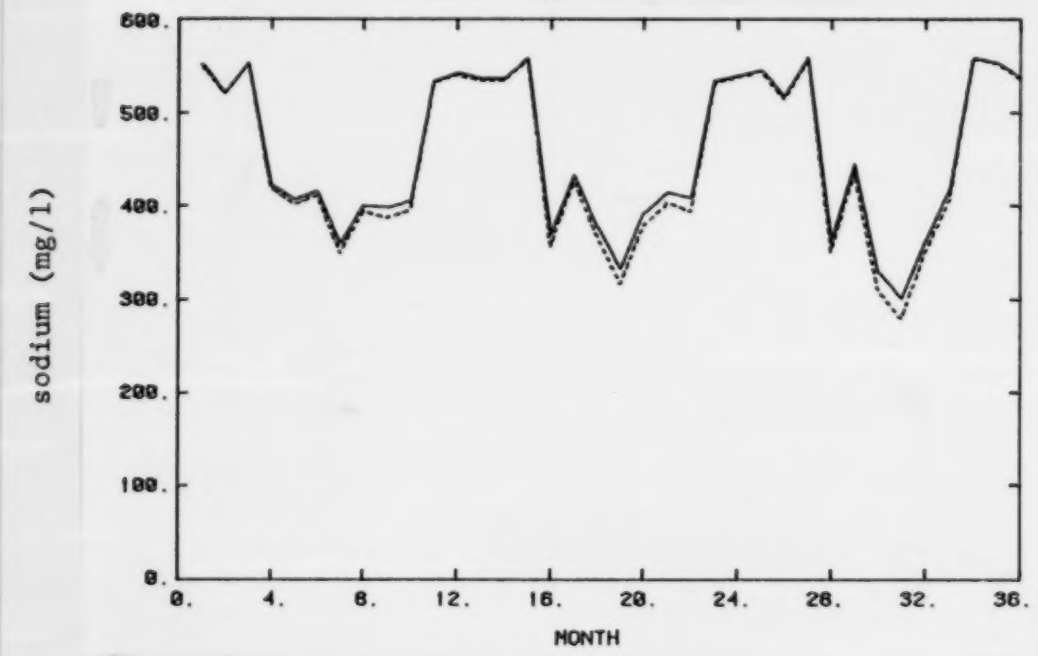


Figure 58a. Simulated drain calcium and sodium concentrations with (—) and without (---) chemical reactions.

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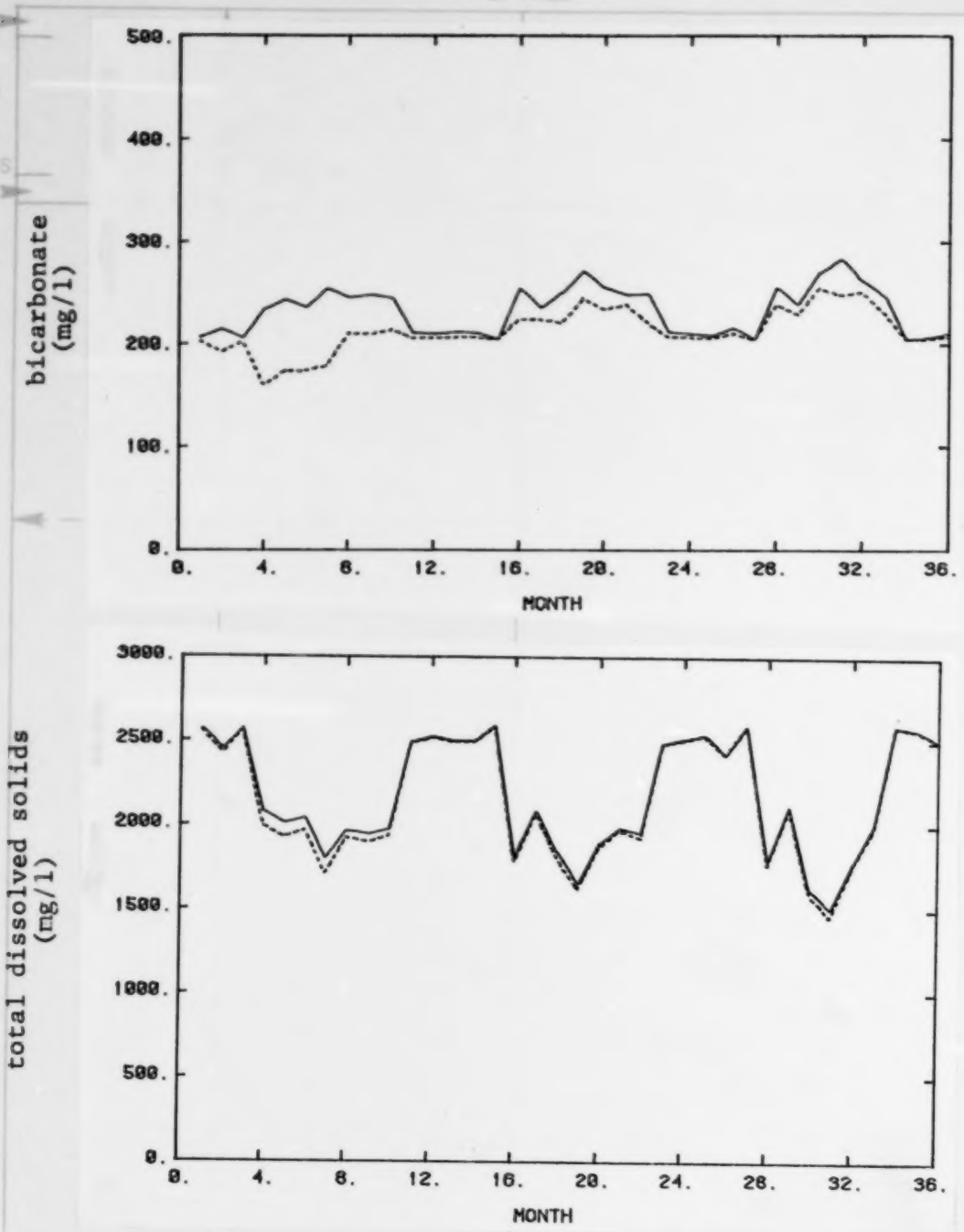

Figure 58b. Simulated drain bicarbonate and TDS concentrations with (—) and without (---) chemical reactions.

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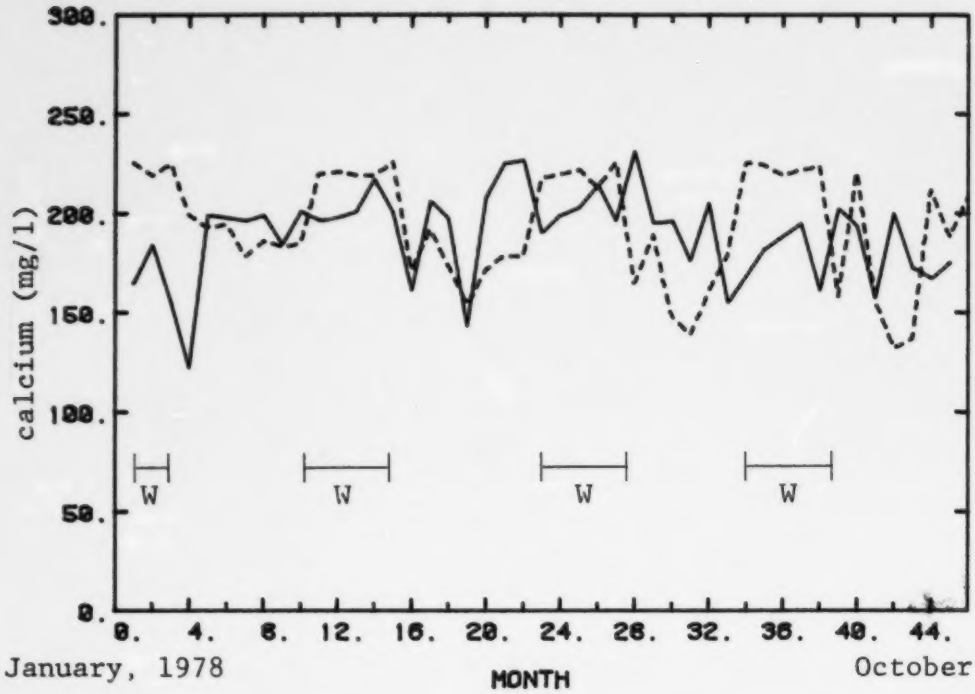


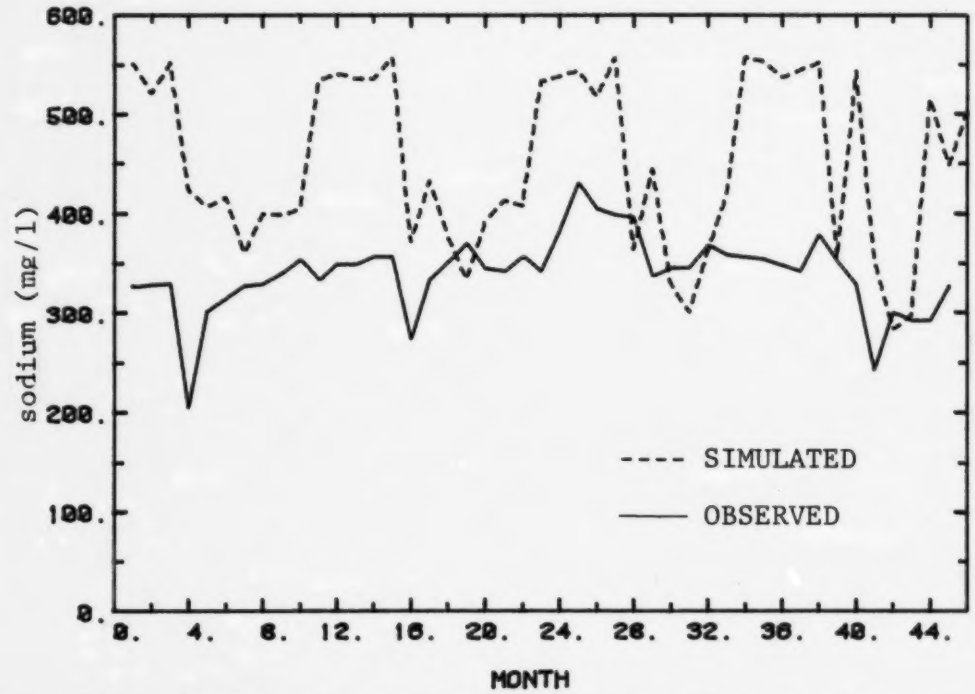
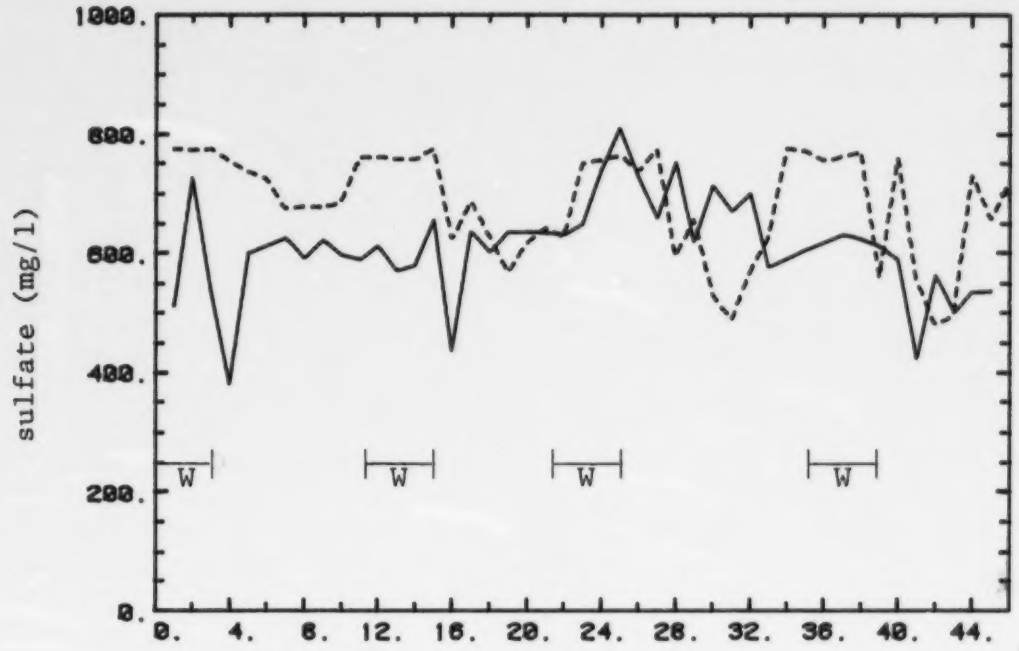


Figure 59a. Simulated and observed drain calcium and sodium concentrations. Winter is indicated by $\vdash\!\underline{\text{W}}\!\dashv$.



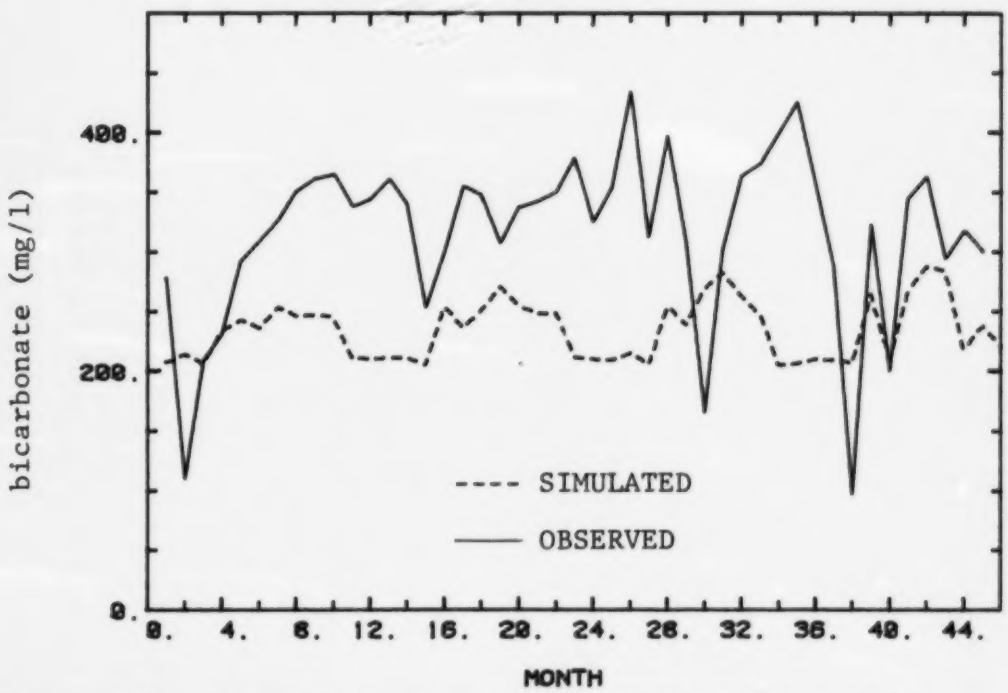
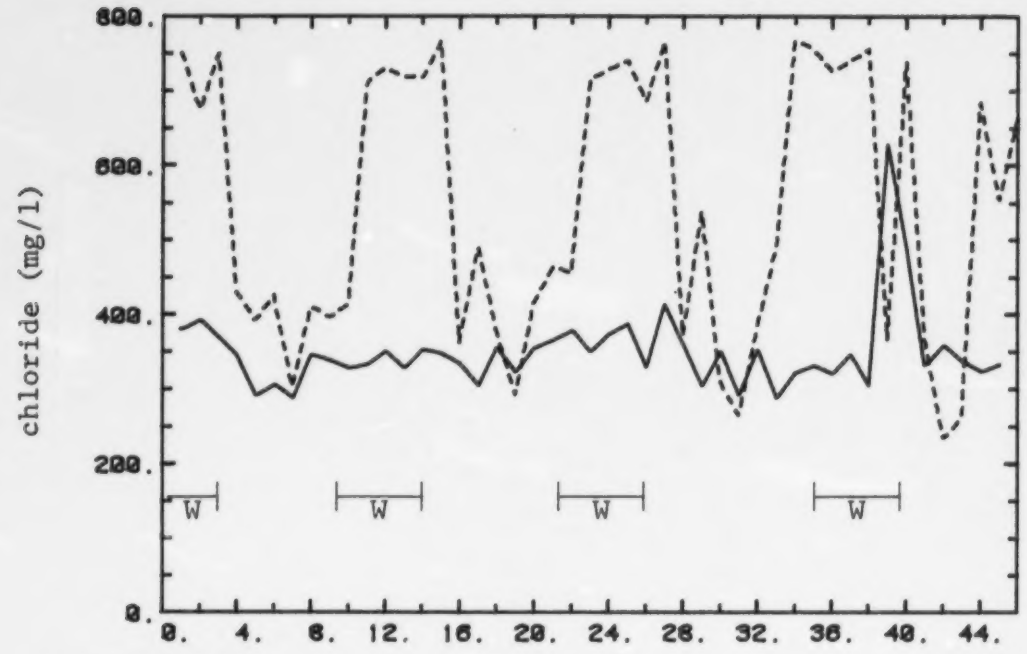


Figure 59b. Simulated and observed drain sulfate and bicarbonate. Winter is indicated by W.



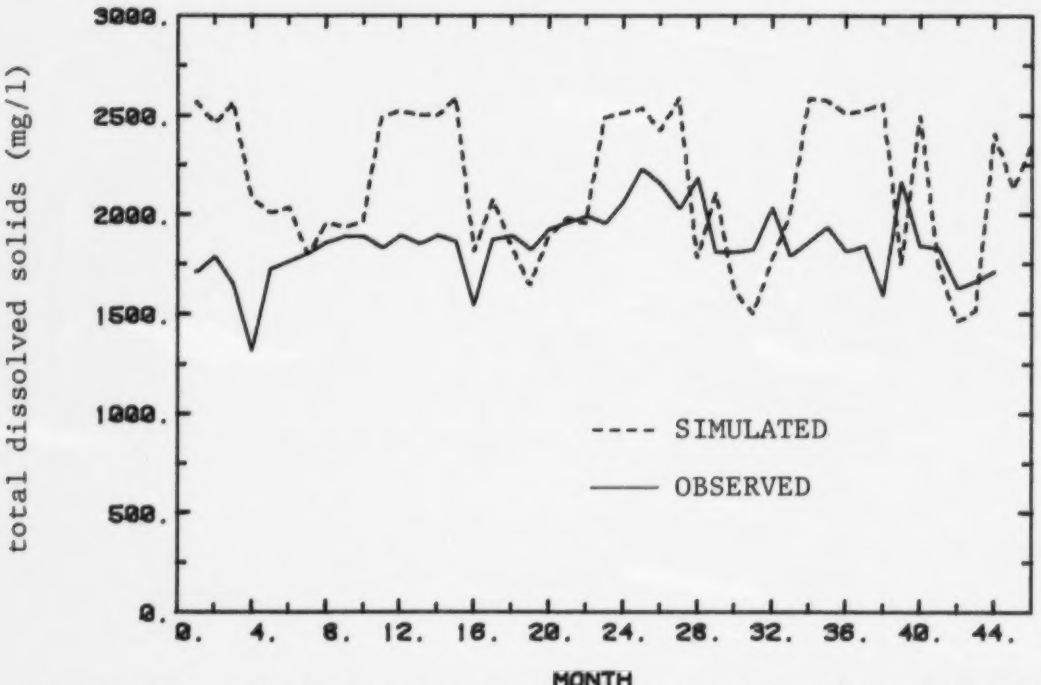
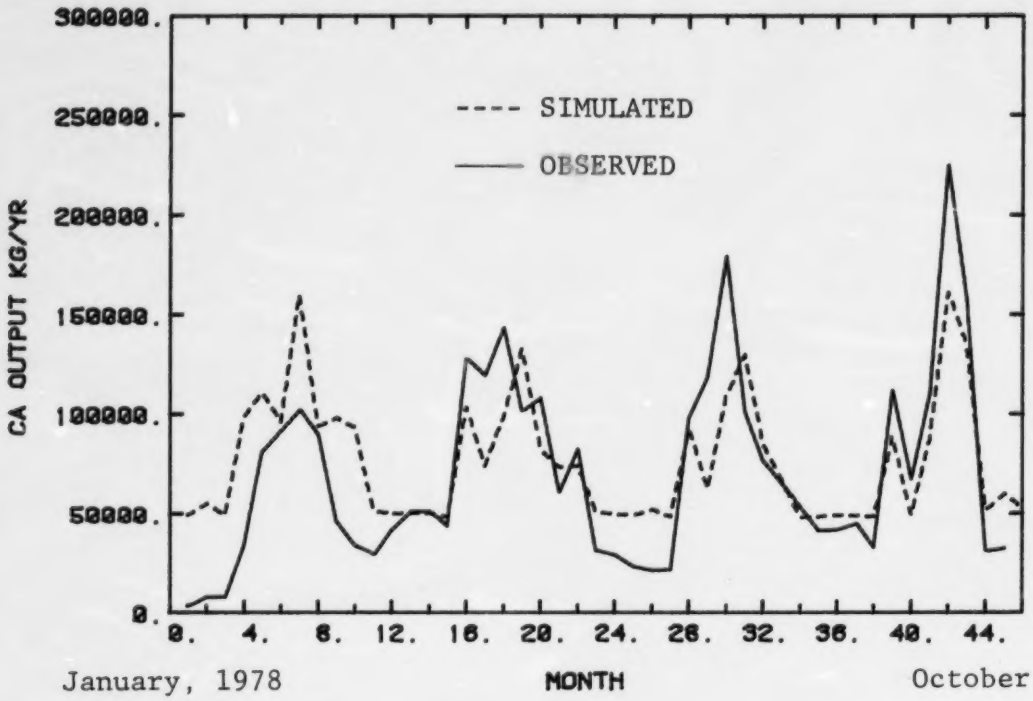


Figure 59c. Simulated and observed drain chloride and total dissolved solids concentrations. Winter is indicated by W .



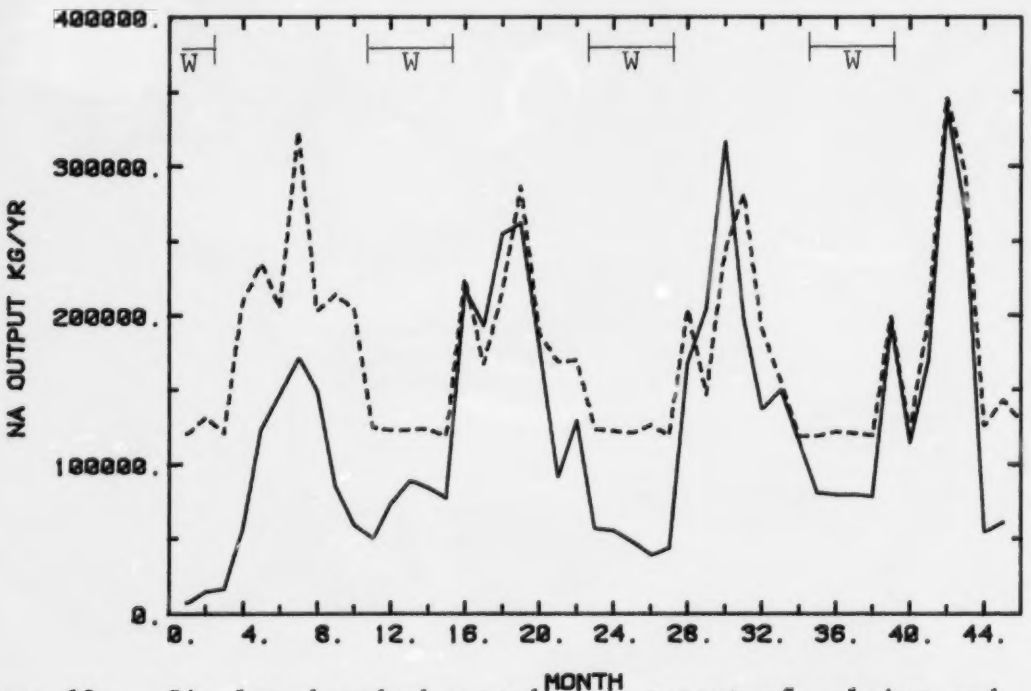


Figure 60a. Simulated and observed mass output of calcium and sodium. Winter is indicated by W.

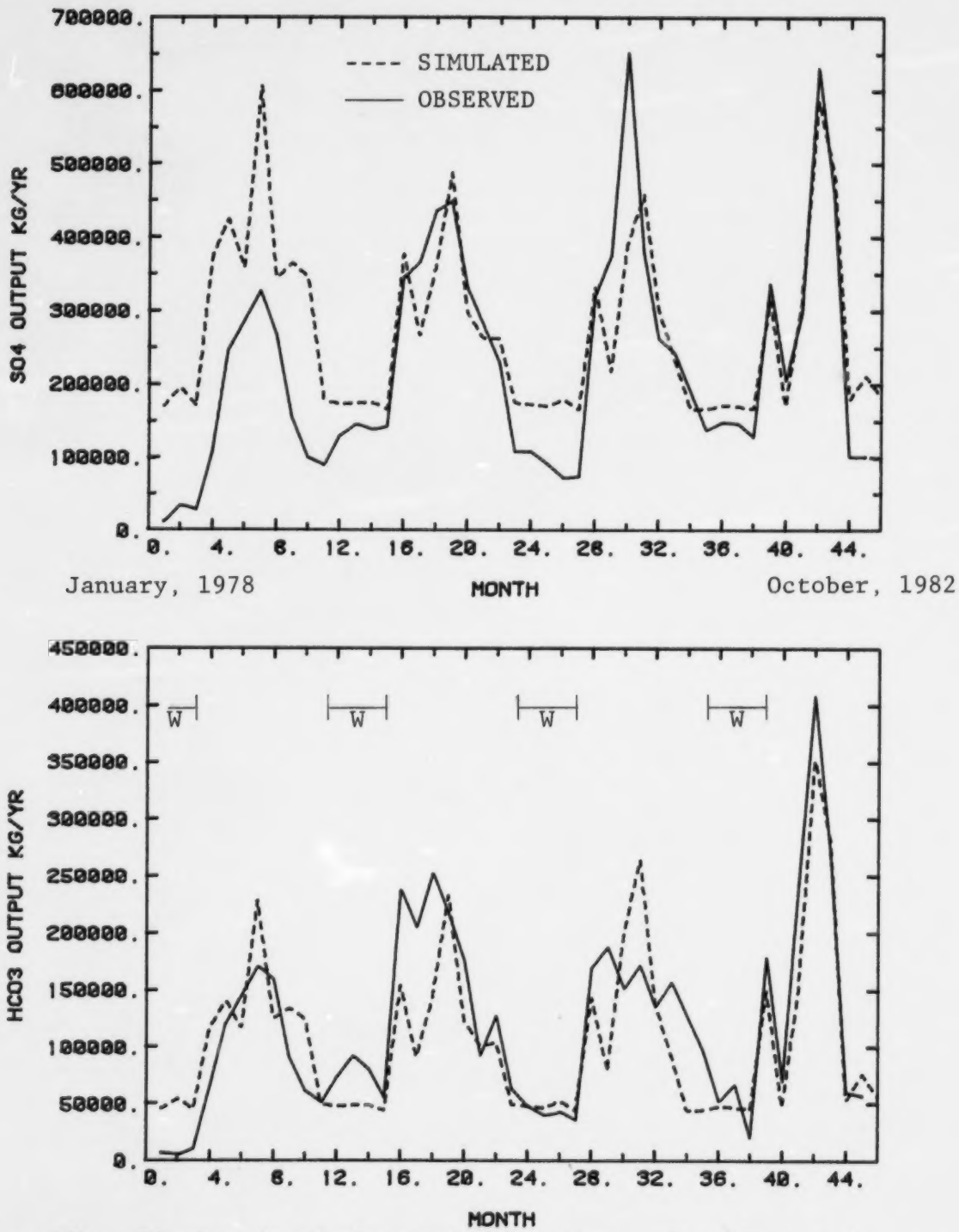
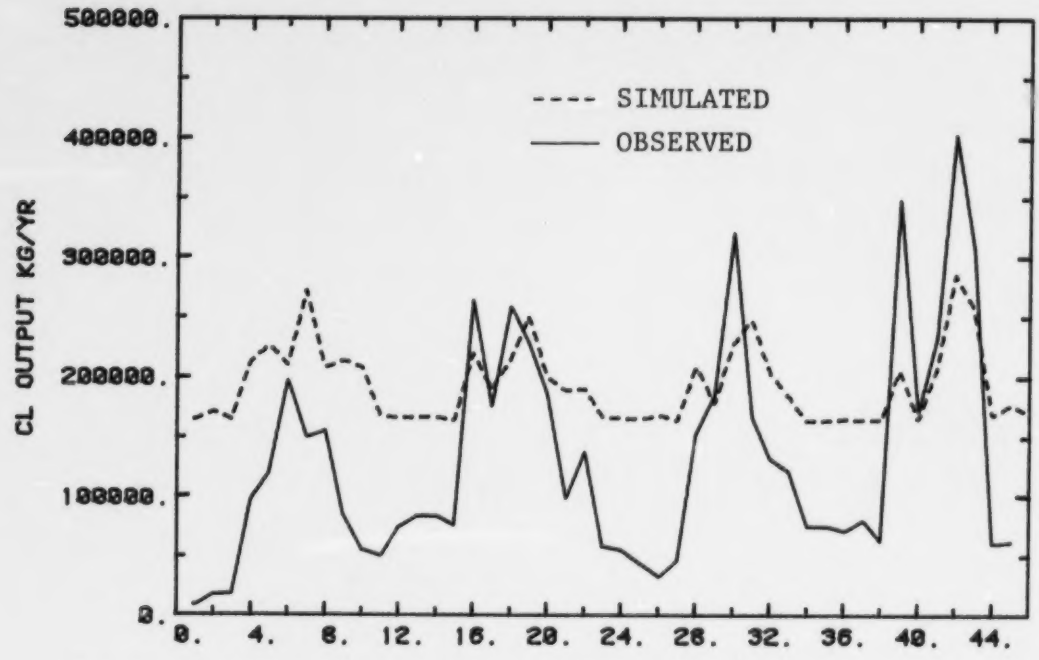


Figure 60b. Simulated and observed mass output of sulfate and bicarbonate. Winter is indicated by W.



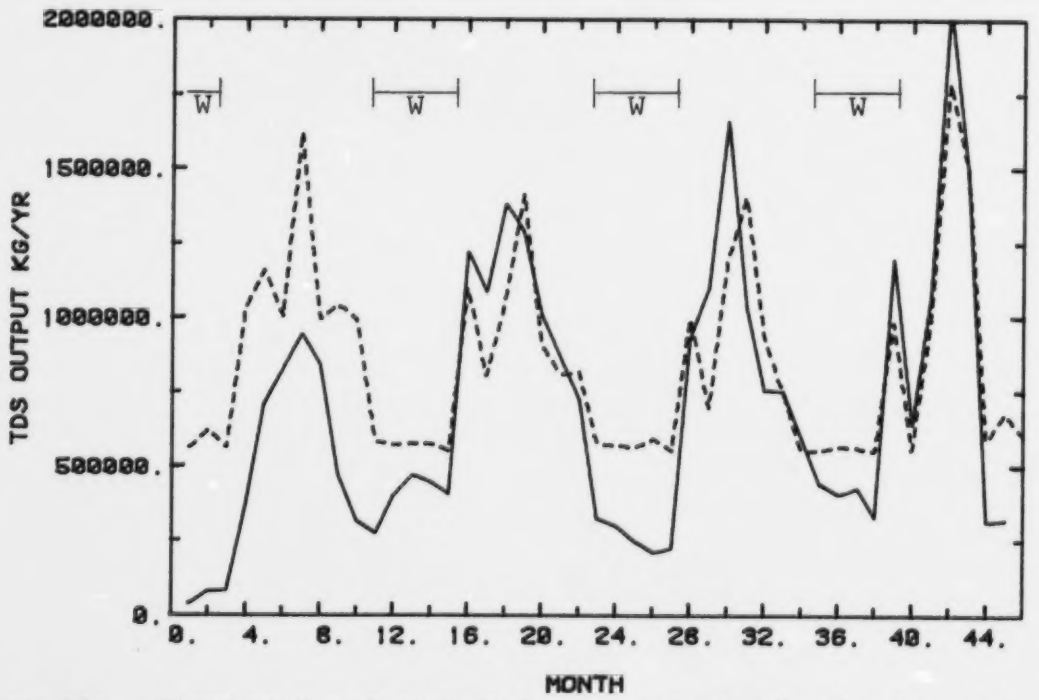


Figure 60c. Simulated and observed mass output of chloride and total dissolved solids. Winter is indicated by W.

layer conductivity ratio of 10 and the upper lower layer thicknesses of 6.1 and 13.7m used in the lumped parameter model, the equation above becomes

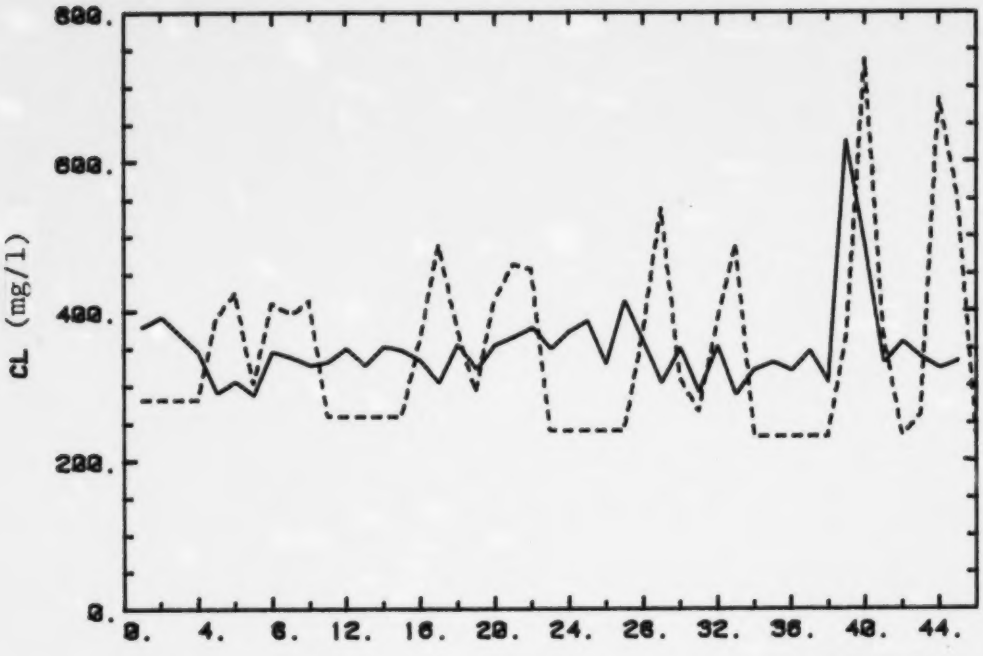
$$C_d = 0.82C_1 + 0.18C_2$$

The upper layer concentration for each winter month is assumed to be the irrigation system outflow concentration during the last month of the irrigation season as simulated by the Drain Effluent Prediction program. This produces the effect of displacing resident irrigation recharge laterally into the drain during the winter. The lower layer concentration is assumed equal to the regional inflow concentration. The simulated drain concentrations and mass output histories of chloride and TDS shown in Figure 61 were obtained using this method to compute winter drain concentrations. In this case it is noted that winter drain concentrations are lower than observed. However, the simulated and observed mass output histories display good winter month agreement indicating an overestimate of winter drain flow.

Discussion

The Bureau of Reclamation hydrosalinity model is designed to simulate the outflow concentrations of an irrigated aquifer given an initial soil analysis and the nature of the irrigation water inputs. In order to apply this model to the San Acacia site it was necessary to define a flushing irrigation system which behaves independently of the regional flow system. This was accomplished by constructing a steady-state flow net of the aquifer receiving equal regional and irrigation recharge, and assigning the irrigation system to the stream tubes conveying only irrigation recharge. Drain concentrations were simulated by mixing the predicted irrigation system outflow with the regional inflow.

Simulation results imply this modeling scheme does not accurately represent the dynamics of the transient system. Results obtained by assuming lateral regional inflow indicate the regional and irrigation flow systems do not behave independently. Rather, during periods of little surficial recharge, high concentration regional flow enters the irrigation system forcing resident irrigation recharge into the drain and violating the flushing irrigation system assumption. By virtue of design, the USBR-EPA model presented here is incapable of simulating this complex relation between the irrigation system and regional inflow. The assumption of a constant regional inflow rate is also inappropriate for the transient system as indicated by the water balance results of the lumped parameter model study. The constant regional inflow rate of 0.885 m/yr. used in the coupled model simulations overestimates the amount entering the farm during 1978 thus producing higher simulated mass output rates than observed during that year.



January, 1978 October, 1982

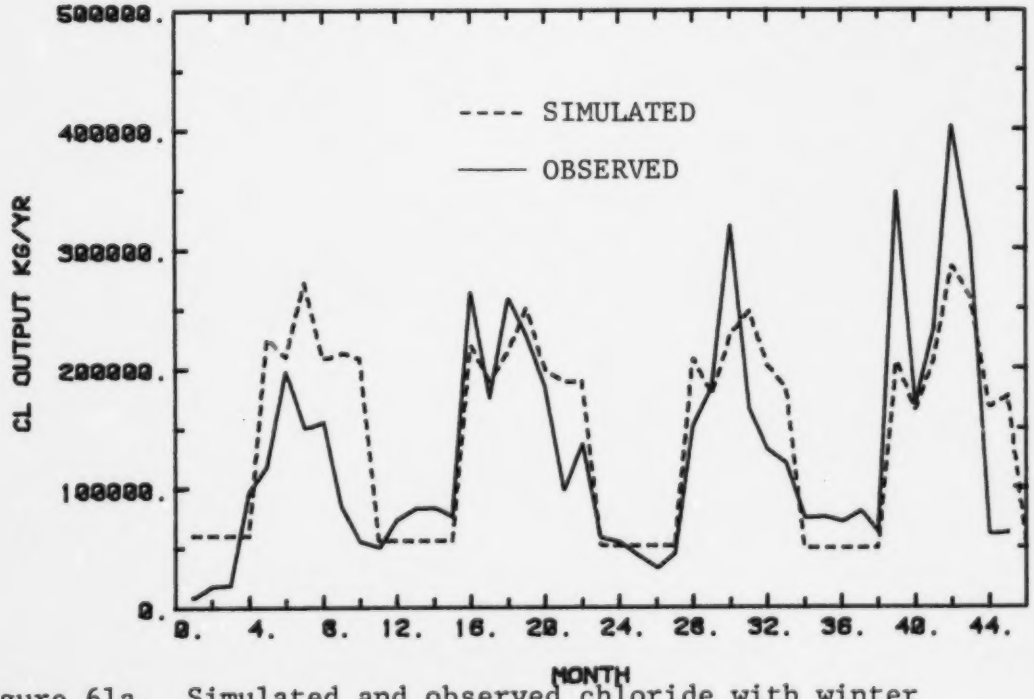
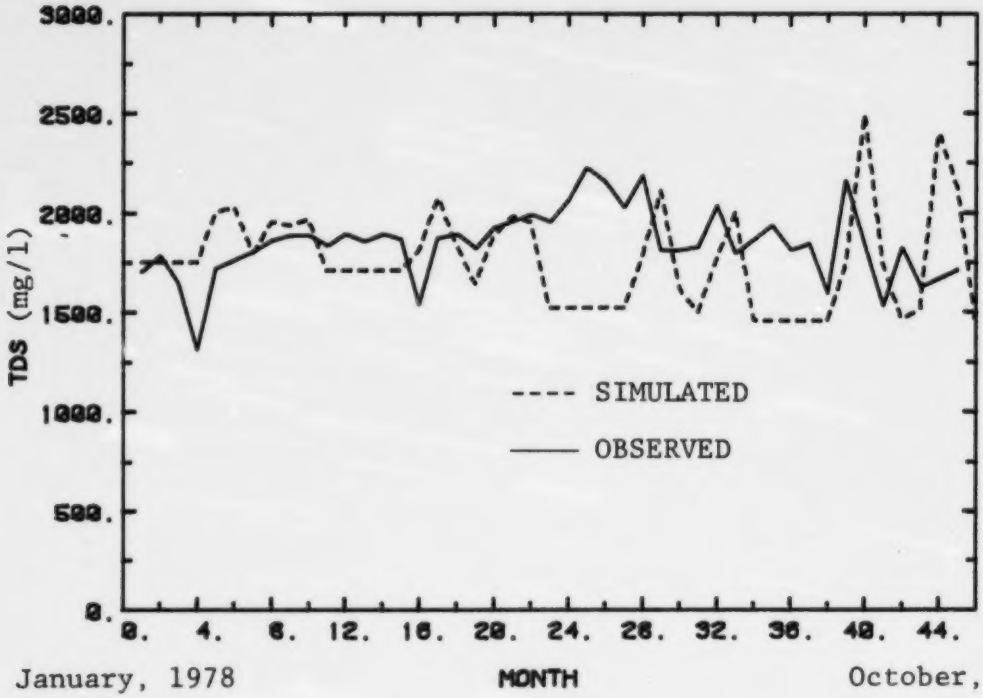


Figure 61a. Simulated and observed chloride with winter modifications.



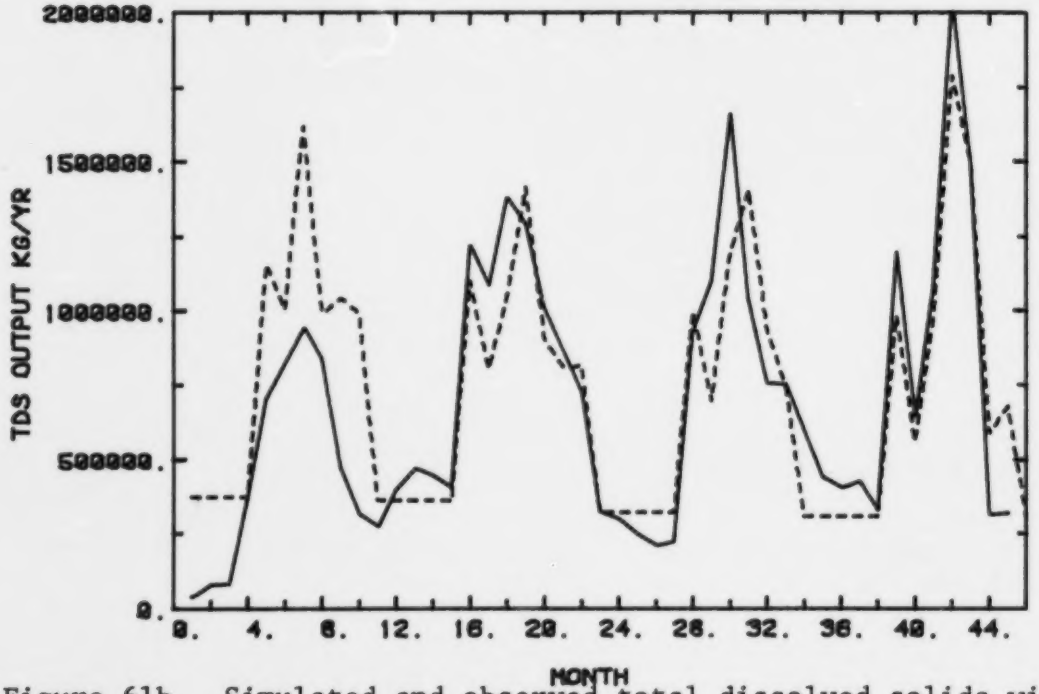


Figure 61b. Simulated and observed total dissolved solids with winter modification.

In both the transient and steady simulations, the inclusion of soil-water chemical reactions produced significant changes only in simulated calcium and bicarbonate concentrations. It is difficult to determine whether these reactions are indicative of the real system since they are assumed to occur in a flushing irrigation system isolated from the regional inflow. The flow of poor quality regional water into the irrigation system during winter months is expected to affect the possible reactions involving nonconservative constituents. The transient behavior of the regional inflow may be ignored in the steady-state simulation of conservative constituents since yearly average drain concentrations are considered. Under steady flow conditions, the yearly average drain concentration of a conservative element is simply a mixture of the regional inflow and irrigation system outflow concentrations. Whether this mixing is considered to occur in the drain or seasonally within the aquifer is inconsequential.

The steady-state simulation results display fair agreement with observed drain concentrations when all constituents are treated as nonreactive. This agreement appears to be independent of the initial soil analysis or groundwater composition. The dominant factor controlling the simulated drain concentrations is the magnitude and quality of the regional inflow. If poor quality regional flow was not entering the system, simulated drain concentrations would fall to the level of the irrigation recharge concentrations after the year 1958. Based on the steady simulation results it was concluded that the average concentrations observed in the three wells at depths of 15.2 to 19.8 m (DW50, DW65, DW54) are somewhat indicative of the regional inflow quality. The average TDS concentration of about 2600 ppm observed in these wells was used as the regional inflow TDS concentration. The average irrigation water TDS concentration for the monitored period 543 ppm implying an irrigation recharge concentration of roughly 1100 ppm. The assumption of equal regional and irrigation recharge rates would thus imply regional inflow is responsible for about 70 percent of the total mass output from the system.

SUMMARY AND CONCLUSIONS

Two modeling approaches were used in this study to determine the characteristics of the middle drain flow system at the San Acacia vsite. The first approach employed multiple celled lumped parameter models, and the second consisted of a profile finite element flow model coupled with the U. S. Bureau of Reclamation hydrosalinity model. The results of the modeling studies indicate the mixing process producing observed drain concentrations involves a complex transient relationship between the irrigation recharge and a poor quality regional inflow.

The drain chloride concentrations and mass outputs simulated with the transient two cell lumped parameter model displayed good agreement with observed values. This model appears to adequately represent the middle drain flow system. The advantages of using the lumped parameter model are its ease of generalization, minor input requirements, and inexpensive computer simulation costs. The disadvantages of the model presented in this study include the inability to simulate soil-water chemical reactions involving nonconservative constituents, and limited predictive capabilities due to the required input of the transient drain flow.

To apply the coupled finite element flow - Bureau of Reclamation hydrosalinity model it was necessary to divide the aquifer into separate irrigation and regional flow systems. Simulation results indicate this separate treatment of the regional and irrigation inflow components does not accurately represent the transient system. However, this approach does produce good agreement between observed simulated drain concentrations in the steady-state case. This is attributed to the assumption that the transient behavior of the regional and irrigation recharge does not influence yearly average drain concentrations.

The following general conclusions are drawn from this study of the model drain flow system at the San acacia site:

(1) A transient regional inflow of poor quality water contributes to the flow of the middle drain.
   a) For the period of 1978 through 1980, the average regional inflow and irrigation recharge rates are nearly equal.
   b) The regional inflow component is responsible for roughly 70 percent of the total mass output from the system.

(2) Separation of the irrigation impact on water quality is difficult in this regionally dominated system.

The experience with application of these models applied at the San Acacia site demonstrates the dynamic structure of the irrigation return flow system. The observations of flow and water quality show a high degree of temporal and spacial variability. A simple lumped parameter water and mass balance model adequately reproduces the dynamic effects but the USBR-EPA model fails to represent the observed temporal system. We do not recommend modification of the USBR-EPA model to represent unsteady conditions with regional inflow. This would require complete revision of the modeling approach and would greatly increase data requirements. The need to simulate dynamic water quality changes in irrigated systems would, in our opinion, be better served by improving the lumper-parameter model to include

the effect of chemical reactions. The data requirements of the lumped-parameter model are less severe, parameter estimation is systematic, and the simple structure is easily modified to reflect site specific conditions. In any case we recommend that a systematic lumped-parameter water and mass balance model be used initially to evaluate overall hydrologic conditions and provide regional management-oriented predictions.

REFERENCES

1. Dixon, W. J., (ed.), BMD Biomedical Computer Programs: Dept. of Biomathematics, School of Medicine, UCLA, Univ. of Calif. Press, Berkeley, Calif., 1976, 773 pp.

2. Doorenbos, J. and W. O. Pruitt, Crop Water Requirements, Irrigation and Drainage Paper 24, FAO, Rome, 1975.

3. Duffy, C. J., P. J. Wierenga, and R. Kselik, Variations in Infiltration Rates Based on Soil Survey Information and Field Measurements, New Mexico Agricultural Experiment Station Bulletin #680, 1981, 40 pp.

4. Duffy, C. J., Stochastic Modeling of Spatial and Temporal Water Quality Variations in Groundwater, Ph.D. Dissertation, New Mexico Institute of Mining and Technology, Socorro, 1982, 146 pp.

5. Duffy, C. J., L. W. Gelhar and P. J. Wierenga, Stochastic Models of Agricultural Drainage Systems, Submitted to J. Irrigation and Drainage Division, ASCE, 1982.

6. Gelhar, L. W. and J. L. Wilson, Groundwater Quality Modeling: Groundwater, 12 (6), 1974, pp. 399-408.

7. Gelhar, L. W., P. J. Wierenga, C. J. Duffy, K. R. Rehfeldt, R. B. Senn, M. Simonett, T.-C. Yeh, A. L. Gutjahr, W. R. Stone and A. Bustamente, Irrigation return flow studies at San Acacia, New Mexico: Monitoring, Modeling and Variability, New Mexico Institute of Mining and Technology, Hydrology Research Program Report No. H-3, 1980, 195 pp.

8. Gelhar, L. W. and C. L. Axness, Stochastic Analysis of Macrodispersion in Three-Dimensionally Heterogeneous Aquifers, New Mexico Institute of Mining and Technology, Hydrology Report H-8, 1981, 140 pp.

9. Jenkins, G. M. and D. G. Watts, Spectral Analysis and its Applications: Holden-Day, San Francisco, California, 1968.

10. Krumbein, W. C., and C. D. Monk, Permeability as a Function of the Size Parameters of Unconsolidated Sand, Am. Inst. Mining and Metall. Eng. Trans. Petroleum Div., 151, 1943, pp. 153-163.

11. Manual of Methods for Chemical Analysis of Water and Wastes U.S.E.P.A., Nat. Envir. Res. Lab. Cincinnati, Ohio, 4568, 1974.

12. Shaffer, M. J., R. W. Ribbens, and C. W. Huntly, Prediction of Mineral Quality of Irrigation Return Flow, Volume V, Detailed Return Flow Salinity and Nutrient Simulation Model: U.S. Environmental Protection Agency, Ada, Oklahoma, 1977, 400 p.

13. Simonett, M. J., Irrigation Return Flow Modeling at San Acacia, New Mexico, M. S. Independent Study Report, New Mexico Institute of Mining and Technology, Socorro, 1981, 112 pp.

14. Standard Methods for the Examination of Water and Wastewater 14th Ed.: APHA, AWWA, NPCF, 1015, 18th St., NW, Washington, D.C. 20036, 1975.

15. Wierenga, P. J. and C. J. Duffy, Inpacts of Irrigated Agriculture on Water Quality in the Rio Grande Below Albuquerque, Eng. Exp. Station Report, New Mexico State University, 1979, 124 pp.

16. Wierenga, P. J., C. J. Duffy, R. Senn and L. W. Gelhar, Impacts of Irrigated Agricultural of Water Quality in the Rio Grande below Albuquerque, Engineering Experiment Station Report, New Mexico State University, 1981, 135 pp.

17. Yeh, T.-C., Stochastic Analysis of Effects of Spatial Variability on Unsaturated Flow, Ph.D. Dissertation, New Mexico Institute of Mining and Technology, 1982, 227 pp.

APPENDIX A

WEEKLY DATA AT SAMPLING STATIONS

See Table 6 for identification of sample station numbers.

Guide to units of data

Item	Units
Specific Conductance	millimhos
pH	self explanatory
$Na\text{-}SO_4$	meq/l
B	ppm
NO_3	ppm NO_3
PO_4	ppm
Water elev.	m above 1400 m MSL

Appendix A (Continued).

WEEK# 1 2/18/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.70	7.57	14.93	8.01	3.49	0.24	26.67	12.63		3.70	10.79	27.10	10.00	0.01	1747.	0.80
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Appendix A (Continued).

WEEK# 2 2/25/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1																
2	3.07	7.98	17.43	11.65	4.51	0.30	33.89	12.61		6.02	13.68	32.31	0.30	0.05	2172.	
3	3.28	8.27	22.98	11.23	4.04	0.35	38.60	4.33	0.80	6.32	25.56	37.01	0.75		2607.	18.68
4																
5																
6																
7																
8																
9	3.13	8.16	20.71	8.77	3.74	0.31	33.53	7.12		5.24	21.85	34.21	0.55	0.01	2331.	18.60
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22	0.96	8.23	5.78	2.61	1.03	0.13	9.55	2.75		2.86	4.03	9.64	0.35	0.18	668.	
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Appendix A (Continued).

WEEK# 3 3/ 4/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1																
2	2.66	7.95	15.64	8.73	3.56	0.26	28.19	11.86	0.24	4.34	12.21	28.65	0.02	0.02	1867.	
3	3.13	7.76	22.45	10.84	4.00	0.33	37.62	4.16		9.90	22.78	36.84	0.08	0.02	2640.	18.67
4																
5	1.32	7.64	5.19	7.33	1.95	0.12	14.59	2.20		6.20	5.69	14.09	17.25	0.07	1024.	19.03
6	2.52	7.16	12.42	12.89	5.47	0.28	31.06	3.47		5.88	19.46	28.81	0.05	0.24	2038.	19.05
7	2.78	7.54	14.58	14.15	4.16	0.23	33.12	4.56		9.36	18.33	32.25	0.05	0.02	2291.	19.26
8	4.05	7.58	29.16	16.08	6.89	0.32	52.45	4.75		9.62	36.27	50.64		0.01	3586.	18.80
9	3.12	7.74	19.73	12.30	4.81	0.26	37.10	8.07		6.90	20.40	35.37	0.02	0.01	2456.	18.61
10	1.81	7.56	11.14	6.89	2.27	0.20	20.50	2.81		8.38	9.59	20.78		0.01	1501.	19.18
11																
12																
13																
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17																
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19																
20																
21																
22	0.98	7.97	5.79	3.36	1.21	0.15	10.51	2.09		3.80	4.32	10.21	1.25	0.12	734.	
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Appendix A (Continued).

WEEK# 4 3/11/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.89	8.03	17.09	8.43	3.82	0.27	29.71	13.20	0.36	3.54	12.21	29.31	0.20	0.01	1900.	0.74
2	2.65	6.16	15.01	6.60	3.72	0.26	27.61	11.01	0.26	4.06	12.46	27.83	0.25	0.01	1777.	
3	3.43	7.78	24.41	10.46	4.32	0.39	39.58	4.30		9.58	25.66	39.54	0.15	0.01	2808.	
4																
5	1.26	7.83	4.89	6.53	1.79	0.30	13.51	2.17		5.78	5.50	13.45	13.00	0.01	971.	19.04
6	2.20	8.05	9.98	8.48	4.76	0.29	23.51	3.32		3.82	17.36	24.50	0.25	0.01	1653.	19.07
7	2.69	7.86	14.33	13.29	4.05	0.24	31.91	4.17	0.20	8.70	18.29	31.36	3.50	0.01	2217.	19.27
8	4.05	7.86	24.74	17.03	7.50	0.33	49.60	4.87		9.62	33.74	48.23	0.25	0.01	3394.	18.80
9	3.05	7.69	19.32	10.39	4.43	0.28	34.42	7.22		6.64	20.33	34.19	0.25	0.02	2355.	18.60
10	2.01	7.78	12.51	7.19	2.76	0.27	22.73	3.02		8.76	11.39	23.17	0.05	0.07	1664.	19.37
11	1.37	7.82	5.54	8.01	1.38	0.15	15.08	1.86		7.30	6.44	15.60	3.40	0.01	1131.	18.99
12	2.60	7.98	15.01	8.80	3.63	0.24	27.68	12.73		3.68	10.61	27.02	0.65	0.03	1760.	0.59
13																
14																
15																
16	1.44	7.99	8.60	4.33	1.67	0.15	14.75	5.02		3.74	5.62	14.38	0.20	0.04	987.	0.70
17																
18	4.53	7.73	22.94	20.45	8.92	0.64	52.95	10.45		8.28	35.44	54.17	0.30	0.02	3648.	18.85
19																
20																
21																
22	0.76	8.14	3.48	2.99	0.95	0.16	7.58	1.30		3.44	3.02	7.76	2.25	0.29	559.	
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Appendix A (Continued).

WEEK# 5 3/18/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1																
2																
3																
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Appendix A (Continued).

WEEK: 6 3/25/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.98	7.81	17.89	8.54	3.73	0.31	30.47	13.49	0.18	3.86	12.56	30.09	1.25	0.02	1962.	0.93
2	2.50	8.28	13.66	9.62	3.66	0.26	27.20	9.80	0.88	4.36	11.39	26.43	1.20	0.06	1748.	
3	4.43	7.75	27.94	21.50	7.74	0.33	57.51	7.83	0.40	11.08	35.85	55.16	15.50	0.20	3868.	18.86
4																
5	1.24	7.97	5.55	9.16	1.75	0.20	13.66	2.10	0.32	5.34	5.69	13.45	1.15	0.04	963.	19.26
6	1.16	8.14	4.93	5.35	1.56	0.19	12.03	1.51	0.40	4.50	5.97	12.48	4.10	0.33	877.	19.40
7	2.10	8.09	8.72	11.82	3.47	0.16	24.17	2.73	0.72	4.94	14.78	23.17	27.00	0.16	1615.	19.51
8	1.35	8.06	6.21	5.19	2.16	0.20	13.76	1.80		5.40	6.72	13.92		0.55	997.	19.15
9	2.55	8.09	14.69	10.08	3.70	0.02	28.49	4.60		6.52	17.51	28.63	3.50	0.05	1987.	18.83
10	1.08	8.05	9.55	7.81	2.69	0.24	20.29	2.84		8.62	9.16	20.62	0.85	0.03	1485.	19.59
11	0.89	8.16	3.98	4.04	1.06	0.08	9.16	1.36		4.28	3.90	9.54	0.60	0.26	685.	19.90
12	2.73	8.22	15.72	8.85	3.71	0.25	28.53	12.54		4.00	11.78	28.32	0.25	0.03	1848.	0.79
13																
14																
15																
16	1.46	8.46	8.19	4.46	1.75	0.16	14.56	5.22	0.40	3.26	5.85	14.73	0.25	0.03	982.	0.72
17	1.43	7.85	7.77	5.12	1.67	0.19	14.75	3.41		6.10	5.97	15.18	2.30	0.26	1078.	19.19
18	3.90	7.79	21.13	19.70	8.27	0.60	49.70	9.71		7.76	29.64	47.11	0.15	0.02	3246.	18.90
19																
20																
21																
22	0.78	8.13	3.44	3.21	1.01	0.16	7.82	1.20	0.13	2.98	3.16	7.47	2.15	0.35	542.	
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Appendix A (Continued).

WEEK# 7 4/ 1/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.95	8.25	17.36	8.50	4.19	0.28	30.33	13.37	0.44	3.22	12.01	29.04	2.10	0.02	1892.	0.89
2	2.56	8.53	14.23	10.04	3.87	0.25	28.39	10.19	1.28	4.02	11.47	26.96	0.02	0.01	1781.	
3	5.01	8.26	32.53	23.68	8.79	0.37	65.37	9.11	1.32	8.98	43.29	62.70	2.05	0.03	4333.	18.80
4																
5	1.26	8.51	4.97	6.31	1.72	0.18	13.18	2.03	1.00	5.16	5.42	13.61	11.50	0.07	946.	19.20
6	1.78	8.71	7.91	9.66	3.21	0.19	20.97	2.25	1.76	4.54	11.66	20.21	0.10	0.29	1391.	19.32
7	2.52	8.26	10.70	14.62	4.37	0.21	29.90	3.92	0.92	7.22	16.54	28.60	20.50	0.08	2002.	19.50
8	1.39	8.72	7.38	5.61	2.44	0.17	15.60	1.79	1.20	4.50	7.57	15.06	0.60	0.11	1056.	19.15
9	3.15	8.71	18.68	12.39	4.90	0.27	36.24	6.05	1.44	5.94	21.57	35.00	0.15	0.01	2404.	18.76
10	1.91	8.55	11.13	7.03	2.70	0.17	21.03	2.78	1.12	7.10	9.40	20.40	0.70	0.01	1453.	19.46
11	0.97	8.73	4.81	4.10	0.87	0.08	9.86	1.42	1.12	3.54	3.76	9.84	4.65	0.04	687.	19.45
12	2.65	8.64	15.11	8.50	3.62	0.23	27.46	11.28	0.92	3.20	10.96	26.36	1.05	0.02	1720.	0.74
13																
14																
15																
16	1.52	8.69	8.07	4.60	1.78	0.14	14.59	5.07	0.76	3.14	5.77	14.74	0.17	0.02	976.	0.74
17	1.54	8.77	9.55	5.26	1.58	0.15	16.54	3.58	1.28	5.02	6.44	16.32	1.60	0.23	1131.	19.27
18	2.43	8.60	10.81	9.50	3.83	0.52	24.66	5.16	1.20	4.88	14.35	25.54	0.30	0.08	1712.	18.91
19																
20																
21																
22	0.79	8.67	3.24	3.26	1.01	0.14	7.65	1.31	0.60	2.94	2.83	7.68	2.20	0.31	537.	
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Appendix A (Continued).

WEEK# 8 4/ 8/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.89	8.34	17.65	8.59	3.90	0.28	30.42	13.42	0.72	3.46	12.32	29.92	0.45	0.02	1936.	0.87
2	2.57	8.32	14.64	9.38	3.59	0.27	27.88	10.27	0.82	4.04	11.90	27.03	0.02	0.02	1785.	
3	5.08	8.31	31.47	23.41	8.64	0.41	63.93	8.69	2.00	9.54	44.36	64.59	0.15	0.02	4394.	18.76
4																
5	1.14	8.59	3.86	6.22	1.61	0.31	12.00	1.84	1.32	4.88	4.52	12.56	9.80	0.06	865.	19.16
6	2.52	8.38	11.63	13.40	5.56	0.32	30.91	3.16	1.64	5.34	19.15	29.29	0.07	0.07	2023.	19.24
7	2.59	8.36	12.49	14.12	4.22	0.23	31.06	4.24	1.64	7.04	16.61	29.53	14.00	0.02	2057.	19.43
8	1.83	8.56	8.61	6.50	3.88	0.24	21.23	2.26	1.72	5.02	11.86	20.86	0.45	0.53	1432.	19.02
9	3.04	8.37	18.88	11.10	4.39	0.27	34.64	6.48	1.16	6.04	20.75	34.43	0.50	0.03	2350.	18.72
10	1.75	8.44	9.20	6.68	2.37	0.19	18.44	2.52	1.60	6.70	8.35	19.17	8.35	0.01	1329.	19.36
11	0.99	8.56	4.88	4.69	0.91	0.10	10.58	1.59	1.96	2.78	4.02	10.35	5.10	0.03	699.	19.25
12	2.69	8.50	15.04	9.22	3.68	0.25	28.19	12.00	1.08	3.02	10.65	26.75	1.00	0.02	1739.	0.71
13																
14																
15																
16	1.66	8.43	9.51	5.08	1.89	0.17	16.65	6.04	0.64	3.40	6.71	16.79	0.30	0.02	1113.	0.72
17	1.53	8.58	8.90	5.47	1.56	0.18	16.11	3.50	1.52	5.10	6.40	16.52	1.45	0.09	1128.	19.18
18	3.60	8.17	14.86	18.52	7.13	0.73	41.24	8.55		7.14	25.70	41.39	0.15	0.03	2801.	18.90
19																
20																
21																
22	0.88	8.13	3.99	3.36	1.04	0.17	8.56	1.62		3.62	3.67	8.91		0.26	633.	
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Appendix A (Continued).

WEEK# 9 4/15/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.04	8.07	18.79	9.46	4.35	0.30	32.90	13.74		4.06	13.85	31.65	1.00	0.01	2086.	0.84
2	2.54	8.27	14.62	9.88	3.94	0.30	28.72	9.82		5.04	12.79	27.65	0.25	0.01	1864.	
3	4.50	7.94	30.59	20.82	7.65	0.38	59.44	7.50		11.74	37.64	56.88	0.22	0.07	4018.	18.79
4																
5	1.15	7.92	5.52	6.07	1.57	0.32	13.48	1.56		6.74	5.11	13.41	6.60	0.01	992.	19.17
6	2.75	8.03	14.42	12.70	6.33	0.33	33.78	3.20		7.26	22.27	32.73	0.25	0.21	2302.	19.26
7	2.23	8.33	9.10	11.58	5.04	0.15	25.87	2.73	0.88	4.54	16.46	24.61	38.75	0.07	1699.	19.37
8	2.86	8.16	14.11	14.80	6.45	0.27	35.93	3.17		8.34	23.36	34.87	3.50	0.52	2453.	19.00
9	3.15	8.40	19.96	12.36	5.16	0.29	37.77	6.74	0.76	6.38	22.42	36.30	0.15	0.01	2508.	18.69
10	1.58	8.56	10.18	6.57	2.25	0.18	19.18	2.14	0.60	6.94	8.66	18.34	14.75	0.01	1333.	19.30
11	0.86	7.87	4.31	4.05	0.85	0.11	9.32	1.26		3.68	4.04	8.98	1.80	0.05	658.	19.15
12	2.70	8.13	15.86	9.18	3.87	0.25	29.16	12.04		3.80	12.01	27.85	0.65	0.01	1841.	0.64
13																
14																
15																
16	1.45	8.11	8.03	4.66	1.82	0.16	14.67	5.08		3.74	6.01	14.83	0.10	0.01	1003.	0.72
17	1.41	8.41	8.90	5.33	1.64	0.17	16.04	3.01	0.76	5.38	6.28	15.43	4.25	0.01	1097.	19.13
18	4.33	7.76	20.36	21.56	8.38	0.85	51.15	10.58		8.74	32.37	51.69	0.35	0.01	3498.	18.89
19																
20																
21																
22	0.96	8.33	5.24	3.48	1.20	0.17	10.09	1.87	0.44	3.44	4.29	10.04	2.30	1.13	707.	
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Appendix A (Continued).

WEEK# 10 4/22/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.75	8.06	16.33	6.02	3.51	0.28	28.14	12.07		4.14	12.13	28.34	1.35	0.02	1853.	1.12
2	2.39	8.15	14.04	6.89	3.45	0.26	24.64	9.70		3.10	12.00	24.80	0.60	0.01	1622.	
3	4.70		14.84	10.86	4.12	0.21	30.03	3.57			39.46		16.75	0.19	2639.	19.06
4																
5	0.98	8.48	5.45	3.44	1.45	0.32	10.66	1.48	0.72	4.76	3.82	10.78	4.95	0.06	772.	19.25
6	2.68	8.52	12.45	11.09	5.82	0.34	32.88	3.41	0.56	4.62	23.80	32.39	0.13		2155.	19.36
7	2.50	8.18	12.71	11.55	4.29	0.21	28.76	3.98		6.50	18.49	28.97	26.00	0.01	2010.	19.62
8	3.29	8.16	17.60	15.90	7.60	0.29	41.33	3.78		7.74	31.26	42.78	0.15	0.02	2935.	19.07
9	3.22	7.80	20.18	12.26	5.05	0.48	37.77	6.80		7.34	24.82	38.96	0.10		2663.	18.79
10	1.61	8.39	10.58	5.31	2.08	0.21	18.18	2.18	0.60	7.40	8.39	18.57	16.30	0.01	1339.	19.52
11	1.08	8.59	5.31	5.23	1.46	0.10	12.10	1.76	1.00	4.68	4.57	12.01	4.40	0.03	846.	20.53
12	2.78	7.95	15.18	9.78	3.94	0.26	29.16	12.21		4.20	12.79	29.20	0.85	0.01	1906.	0.91
13																
14																
15																
16	1.48	8.27	9.33	3.82	1.83	0.17	15.15	5.57		2.90	6.65	15.12	0.15	0.03	1014.	0.86
17	1.18	8.39	5.45	4.51	1.43	0.24	11.63	2.27	0.56	4.40	4.74	11.97	0.60	0.16	836.	19.58
18	2.51	8.14	11.60	11.79	4.80	0.71	28.90	5.84		5.76	16.74	28.34	17.25	0.03	1952.	19.00
19																
20																
21																
22	0.89	8.62	4.12	3.63	1.22	0.16	9.13	1.62	0.80	3.08	4.15	9.65	0.85	0.14	657.	
23																
24																
25	3.33	8.37	21.58	9.55	4.28	0.30	35.71	15.77	0.52	2.58	16.62	35.49	0.30		2282.	20.17
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Appendix A (Continued).

WEEK# 11 4/29/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.87	8.41						13.61								0.95
2	2.29	8.24						9.48								
3	3.57	8.48						6.37								18.83
4																
5	1.19	8.56						1.79								19.28
6	2.39	8.07						4.89								19.34
7	2.36	8.57						3.94								19.54
8	2.32	8.59						3.84								19.12
9	2.83	8.52						6.03								16.79
10	1.59	8.45						2.33								19.51
11	1.09	8.56						1.60								19.47
12	2.48	8.66						10.82								0.73
13																
14	1.55	8.60						2.75								18.98
15																
16	1.50	8.77						5.39								0.77
17	1.28	8.64						3.01								19.23
18	2.06	8.65						4.94								18.94
19																
20																
21																
22	0.99	8.79						1.94								
23																
24																
25	3.20	8.49						15.08								20.35
26																
27																
28																
29																
30																
31																
32																
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Appendix A (Continued).

WEEK# 12 5/ 6/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.81	8.24														0.90
2	2.56	8.12														
3	3.07	8.25					12.46									18.78
4							10.66									
5	1.11	8.56					5.14									19.12
6	2.45	8.40														19.19
7	2.38	8.15					1.72									19.37
8	3.47	8.40					3.20									18.98
9	3.05	8.42					4.17									18.70
10	1.52	8.55					3.94									19.31
11	1.11	8.44					6.43									19.19
12	2.54	8.43					2.40									0.79
13							1.81									
14	1.72	8.50					11.46									18.90
15																
16	1.51	8.70					2.94									0.76
17	1.48	8.14														19.19
18	1.72	7.72					5.44									18.92
19							3.27									
20	1.81	8.67					3.73									19.42
21																
22	1.13	8.63					3.20									20.25
23																
24							2.43									
25	3.02	8.35														
26							13.99									
27																
28																
29																
30																
31																
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Appendix A (Continued).

WEEK# 13 5/13/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.59	8.52						11.45								
2	2.35	8.55						8.89								1.13
3																
4																
5	1.10	8.64						1.86								
6	2.67	8.00						3.27								19.27
7	2.59	8.15						3.44								19.33
8	3.66	8.55						4.13								19.51
9	2.92	8.61						6.00								19.02
10	1.60	8.72						2.31								18.75
11	1.37	8.75						2.77								19.47
12	2.57	8.62						10.93								20.17
13																0.98
14	1.69	8.30						2.91								
15	1.21	8.01						2.31								19.04
16	1.55	8.59						5.41								19.50
17	1.47	8.55						2.92								0.83
18	2.60	8.09						7.07								19.27
19																18.96
20	1.21	8.43						2.36								
21																19.64
22	1.16	8.42						2.47								
23																
24																
25	3.14	8.21						14.84								
26																20.37
27																
28																
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Appendix A (Continued).

WEEK# 14 5/20/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.00	8.41	18.10	8.86	3.96	0.30	31.22	13.24	0.52	4.04	12.56	30.36	0.60		1988.	1.01
2	2.56	8.14	14.70	8.18	3.52	0.25	26.65	10.42		4.02	11.92	26.36	0.10	0.02	1742.	
3	2.23	8.42	13.00	8.56	2.97	0.28	24.81	3.87	0.92	6.96	13.64	25.39	0.02	0.02	1762.	18.79
4																
5	1.26	8.42	5.60	6.24	1.50	0.27	13.61	2.11	0.60	5.34	5.68	13.73	16.50	0.03	974.	19.16
6	2.65	8.32	12.14	13.79	5.77	0.21	31.91	3.25	0.60	6.78	20.44	36.08	0.27	0.05	2162.	19.24
7	2.54	8.20	12.72	11.70	4.18	0.20	28.80	4.16		8.78	16.42	29.66	13.25	0.12	2057.	19.42
8	1.45	7.89	7.24	6.08	2.06	0.24	15.62	2.25		6.50	7.36	16.11	0.32	0.18	1153.	19.04
9	2.79	7.90	16.30	10.85	3.82	0.28	31.25	5.60		7.10	18.66	31.30	0.08	0.02	2175.	18.75
10	1.78	8.44	10.16	6.28	2.60	0.14	19.18	2.59	0.96	7.14	8.32	19.01	20.00	0.02	1352.	19.40
11	1.48	8.04	6.06	7.75	1.63	0.13	15.57	3.01		6.00	7.20	16.21	1.30	0.02	1138.	19.36
12	2.66	8.48	15.35	8.11	3.38	0.25	27.09	11.18	0.60	3.76	11.40	26.94	0.75	0.02	1758.	0.63
13																
14	1.80	8.15	8.72	9.76	1.65	0.12	20.25	3.05		8.10	8.76	19.91	0.72	0.02	1444.	18.94
15	1.40	8.46	6.64	6.04	2.34	0.11	15.13	2.69	0.40	4.68	6.84	14.61	27.50	0.02	1028.	19.40
16	1.59	8.67	9.28	4.89	1.89	0.15	16.21	5.54	0.72	3.56	6.48	16.30	0.15	0.03	1087.	0.81
17	1.48	8.33	8.30	5.36	1.53	0.20	15.39	2.80	0.52	4.84	7.84	16.00	0.50	0.13	1111.	19.17
18	2.01	7.99	8.64	8.92	3.23	0.61	21.40	4.73		6.82	10.56	22.11	0.10	0.02	1531.	18.92
19																
20	1.46	8.64	8.12	5.73	1.88	0.20	15.93	2.70	1.12	5.06	7.12	16.00	4.90	0.02	1112.	19.48
21																
22	0.97	8.62	4.66	3.78	1.22	0.17	9.83	1.74	0.72	3.44	4.24	10.14	1.35	0.18	701.	
23																
24																
25	3.17	8.31	19.87	8.05	3.58	0.30	31.80	14.02	0.32	3.16	15.60	33.10	0.10	0.05	2122.	20.25
26																
27																
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Appendix A (Continued).

WEEK# 15 5/27/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.54	7.99						12.86								1.02
2	2.84	7.97						10.52								
3	2.45	7.58						3.92								18.73
4																
5	1.08	7.73						1.73								19.19
6	2.83	8.35						3.14								19.14
7	2.55	7.59						3.91								19.33
8	2.29	8.41						2.87								18.94
9	3.18	8.30						5.65								18.66
10	1.71	8.01						2.47								19.24
11	1.37	8.56						2.66								19.17
12	2.72	8.31						10.87								0.96
13																
14	1.67	7.68						2.93								18.86
15	1.46	8.40						2.77								19.33
16	1.67	8.38						5.80								0.86
17	1.65	7.65						2.75								19.16
18	1.97	7.67						4.21								18.91
19																
20	1.65	8.34						2.86								19.37
21																
22	1.15	8.63						2.19								
23																
24	2.21	8.27						2.82								19.28
25	3.25	7.73						13.64								20.17
26																
27																
28																
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Appendix A (Continued).

WEEK# 16 6/ 3/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.61	8.15						10.45								
2	2.47	8.18						7.87								1.32
3																
4																
5	1.45	8.25						2.87								
6	3.07	7.43						3.17								19.20
7	2.93	8.17						3.25								19.46
8	3.11	7.42						3.56								19.71
9	3.36	7.69						5.85								18.98
10	1.74	7.70						2.13								18.76
11	1.49	8.19						3.11								19.65
12	2.65	8.22						8.41								20.51
13																1.22
14	1.91	7.63						3.04								
15	1.77	7.97						3.44								19.05
16	1.65	8.29						5.54								19.41
17	1.65	7.65						2.75								
18	3.02	7.65						4.69								19.27
19	1.69	7.47						2.79								18.97
20	1.69	7.52						2.77								19.21
51																19.76
22	1.25	8.39						2.70								
23																
24	3.00	7.88						2.74								
25	3.24	7.65						13.89								20.01
26																20.13
27																
28																
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Appendix A (Continued).

WEEK# 17 6/10/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.82	8.15						12.62								
2	2.64	8.02						10.74								1.21
3	3.03	7.90						4.70								
4																18.76
5	1.36	7.35	6.16	6.89	1.85	0.37	15.27	2.02		7.88	5.48	15.38		0.01	1132.	19.08
6	2.50	7.76						3.25								19.28
7	2.45	7.74						3.79								19.45
8	1.74	7.30						2.91								19.08
9	3.08	7.73						5.50								18.78
10	1.72	8.13						2.46								19.43
11	1.48	8.09						3.17								19.39
12	2.53	8.30						10.66								1.13
13																
14	1.75															18.97
15	1.65	7.78						3.31								19.43
16	1.67	8.38						0.10								0.86
17	1.35	8.18						2.48								19.19
18	1.82	7.72						4.08								18.93
19	1.97	8.10						2.74								19.23
20	1.77	7.79						2.93								19.48
21																
22	1.25	8.37						2.89								
23	1.59	7.89						3.20								19.27
24	3.12															19.39
25	3.18	7.88						14.44								20.39
26																
27																
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Appendix A (Continued).

WEEK# 18 6/17/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.83	7.84	18.45	7.85	4.31	0.27	30.88	12.75		4.80	12.92	30.47	0.65	0.02	2010.	1.07
2	2.55	8.02	15.00	8.71	4.01	0.24	27.96	10.60		5.68	11.40	27.68	0.25	0.02	1847.	
3	2.96	8.03	17.95	12.39	4.89	0.34	35.57	4.79	0.56	8.72	20.68	34.75	0.10	0.01	2446.	18.73
4																
5	1.27	8.33						1.96								19.08
6	2.82	8.28	14.55	13.48	5.89	0.36	34.28	3.40	0.88	5.38	23.24	32.90		0.01	2282.	19.13
7	2.32	8.44	12.80	10.29	3.80	0.47	27.36	4.00	0.88	7.54	14.68	27.10		0.02	1898.	19.38
8	2.06	7.92	11.10	9.10	3.23	0.32	23.75	3.07		7.60	13.32	23.99		0.02	1702.	18.94
9	3.21	8.49	21.23	12.24	5.32	0.35	39.14	5.82	0.84	6.00	26.30	38.96		0.01	2672.	18.67
10	1.46	8.45	9.78	3.89	2.44	0.17	16.26	2.57	0.48	5.32	7.64	16.01	16.25	0.01	1136.	19.22
11	1.41	8.04	7.08	6.85	1.44	0.24	15.61	3.00		5.72	6.76	15.48	0.75	0.01	1107.	19.17
12	2.78	8.06	16.15	10.07	4.14	0.25	30.61	11.68		4.70	12.80	29.18	0.60	0.02	1949.	0.99
13																
14	1.75	7.61	8.42	9.81	1.66	0.14	20.03	5.62		5.52	9.08	20.22	4.90	0.01	1388.	18.89
15																
16	2.44	8.01	16.15	6.14	3.08	0.22	25.59	9.83		4.28	12.00	26.11	0.50	0.02	1726.	0.66
17																
18	1.96	7.43	10.22	7.98	2.83	0.64	21.67	6.51		5.64	8.36	20.51	15.50	0.82	1431.	19.19
19	1.46	7.99	9.40	5.40	2.31	0.18	17.29	2.41		7.68	6.56	16.65		0.02	1229.	19.03
20	1.86	8.29	10.86	8.20	2.94	0.40	22.40	3.02	0.52	8.16	9.40	21.10		0.15	1537.	19.31
21																
22	1.37	8.76	8.16	4.78	1.83	0.22	14.99	3.33	0.96	3.86	6.80	14.95	0.50	0.01	1023.	
23	1.57	8.02	6.88	8.62	2.53	0.42	18.45	3.77		6.00	8.32	18.09		0.01	1277.	19.05
24	2.94	7.11	15.85	14.36	4.32	0.78	35.31	3.72		9.96	23.00	36.68		0.04	2579.	19.24
25	3.09	8.54	20.34	9.00	3.90	0.33	33.57	13.73	0.60	2.98	15.30	32.61	0.10	0.02	2130.	20.21
26																
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Appendix A (Continued).

WEEK# 19 6/24/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.90	7.82						13.02								
2	2.11	8.10						8.31								1.04
3	1.58	8.42						3.15								
4																18.72
5	1.15	8.36						1.88								
6	2.65	7.81						3.12								19.07
7	2.29	8.25						3.88								19.11
8	2.70	8.35						3.45								19.26
9	3.22	8.12						6.13								18.88
10	1.59	8.36						2.44								18.62
11	1.28	8.45						2.71								19.26
12	2.86	7.99						11.96								19.20
13																0.96
14	1.70	7.61						2.66								
15																18.85
16	2.46	8.02						9.12								
17																0.56
18	1.87	8.10						5.68								
19	1.42	8.35						2.03								18.86
20	1.92	7.91						3.00								18.92
21																19.50
22	1.16	8.56						2.30								
23	1.39	8.28						2.56								
24	2.44	8.01						3.01								18.95
25	3.09	8.53						12.38								19.65
26																20.12
27																
28																
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Appendix A (Continued).

WEEK# 20 7/ 1/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.68	7.64						12.19								
2	2.70	7.58						11.88								1.09
3	1.68	7.41						3.32								
4																18.66
5	1.35	7.55						2.69								
6	2.14	7.13						2.55								19.07
7	2.29	7.34						4.02								19.19
8	1.93	7.29						3.20								19.29
9	1.80	7.31						3.28								19.02
10	1.72	7.29						2.75								18.74
11	1.64	7.83						3.81								19.48
12	2.59	7.63						11.24								19.51
13																
14	1.63	7.52						5.42								
15																
16	1.95	7.93						7.47								18.87
17																
18	1.81	7.88						5.61								0.83
19	1.66	7.43						5.13								
20	1.85	7.42						5.94								18.88
21																19.30
22	0.87	8.53						1.43								19.42
23	1.76	7.38						8.77								
24	2.98	7.52						7.10								
25	3.00	7.58						14.06								19.39
26																19.38
27																20.04
28																
29																
30																
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Appendix A (Continued).

WEEK# 21 7/ 8/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.87	7.82						12.74								0.86
2	2.78	7.77						12.12								
3	2.17	7.17						3.80								18.62
4																
5	1.56	7.65						3.34								19.02
6	2.35	7.13						2.82								19.15
7	2.22	7.59						3.71								19.28
8	1.39	7.91						2.12								18.98
9	2.93	7.73						5.77								18.70
10	1.72	8.05						2.79								19.36
11	1.56	7.98						3.30								19.37
12	2.64	8.00						11.28								0.94
13																
14	1.66	7.72						2.76								18.85
15																
16	1.78	7.82						6.12								0.84
17																
18	2.83	7.42						7.41								18.91
19	1.56	7.59						2.29								19.17
20	1.92	7.45						3.01								19.33
21																
22	0.90	8.00						1.37								
23	2.06	7.66						4.94								19.28
24	2.79	7.28						3.77								19.31
25	3.04	7.99						13.90								20.31
26																
27																
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Appendix A (Continued).

WEEK# 22 7/15/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.85	7.70						12.24								0.74
2	2.78	8.17						11.61								
3	2.62	7.35						3.97								18.57
4																
5	1.59	8.21						3.31								18.98
6	2.49	7.91						2.87								19.04
7	2.35	8.00						3.80								19.21
8																
9	3.14	7.61						9.35								18.59
10	1.80	7.64						2.76								19.17
11	1.42	7.77						2.94								19.13
12	2.58	8.11						10.55								0.91
13																
14	1.72	7.60						2.73								18.89
15																
16	1.72	7.74						6.43								0.83
17																
18	3.68	7.44						9.18								18.88
19																18.98
20	1.93	7.81						2.98								19.25
21																
22	0.96	7.94						1.49								
23	1.68	7.79						3.71								19.01
24	2.87	7.88						4.04								19.20
25	3.02	7.91						13.35								20.14
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Appendix A (Continued).

WEEK# 23 7/22/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.95	8.03	18.09	8.28	3.70	0.26	30.33	12.63		4.80	12.80	30.23	1.00	0.03	1992.	0.73
2	2.80	8.29	15.41	9.36	4.12	0.26	29.15	11.74	0.64	3.96	12.32	28.66	0.05	0.04	1871.	
3	1.95	8.21	9.45	9.05	2.87	0.28	21.65	2.40		6.92	12.64	21.96	0.10	0.04	1559.	18.66
4																
5	1.55	8.22						3.21								18.99
6	2.65	7.80	12.80	11.16	5.23	0.34	29.53	3.03		7.42	19.84	30.29	0.10	0.02	2108.	19.06
7	2.43	8.14	12.15	10.30	3.56	0.24	26.25	3.88	0.76	7.48	15.16	27.28	5.15	0.02	1883.	19.23
8	3.56	8.26	21.19	14.90	5.81	0.48	42.38	4.57	0.88	9.60	29.00	44.05	0.02	0.04	3042.	18.86
9																
10	1.90	7.83	9.18	7.98	2.75	0.18	20.09	2.93		7.90	9.32	20.15	2.20	0.02	1445.	19.13
11	1.43	7.84	6.48	6.73	1.38	0.16	14.75	2.94		4.88	7.36	15.18	11.25	0.02	1062.	19.09
12	2.65	8.15	14.50	8.59	3.54	0.24	26.87	10.80		4.58	11.44	26.82	0.80	0.02	1770.	0.94
13																
14	1.84	8.01	7.90	10.19	1.79	0.14	20.02	3.11		8.16	9.12	20.39	0.05	0.02	1459.	18.83
15																
16	1.76	8.51	9.32	5.62	2.13	0.16	17.23	6.02	0.60	4.32	7.16	18.10	0.08	0.06	1198.	0.87
17																
18	4.32	7.58	18.42	22.30	8.13	0.93	49.78	10.03		7.02	34.90	51.95	0.20	0.02	3466.	18.87
19	1.50	7.47	6.62	6.42	2.02	0.34	15.40	2.30		7.00	6.12	15.42	0.05	0.02	1121.	18.90
20	2.01	8.20	11.45	7.97	2.79	0.20	22.41	3.14		9.78	10.36	23.28	5.65	0.01	1670.	19.32
21																
22	1.38	8.44	6.80	5.31	1.80	0.20	14.11	2.54	0.48	2.88	8.56	14.46	3.90	0.06	984.	
23	1.56	8.17	6.40	7.49	2.08	0.45	16.42	3.12		5.46	7.88	16.46	2.20	0.01	1162.	18.90
24	1.21	8.31	6.00	4.92	1.76	0.28	12.96	2.00	0.28	4.81	6.12	13.21	0.10	0.03	936.	20.04
25	3.08	8.09	18.58	7.89	3.61	0.27	30.35	13.69	0.24	3.34	14.30	31.57	0.40	0.01	2023.	20.06
26																
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Appendix A (Continued).

WEEK# 24 7/29/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.65	8.60						10.94								0.77
2	1.68	8.16						3.91								
3	1.93	8.39						2.47								18.57
4																
5	1.61	7.71	6.04	8.38	2.10	0.61	17.13	2.92		6.80	7.52	17.24		0.02	1236.	19.03
6	2.49	8.59						2.99								12.05
7	2.23	7.95						3.95								19.23
8																18.84
9	3.14	8.04						6.98								18.62
10	1.84	8.61						3.14								19.19
11	1.34	7.91						2.36								19.19
12	2.49	8.35						10.68								0.96
13																
14																18.78
15																
16	1.73	8.19						5.91								0.85
17																
18	3.37	8.20						7.80								18.90
19																18.93
20	1.92	8.48						2.93								19.32
21																
22	1.34	8.42						1.53								
23	1.58	7.95						3.17								19.05
24	1.78	8.01						2.57								19.21
25	3.03	8.10						13.65								20.04
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Appendix A (Continued).

WEEK# 25 8/ 5/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.94	8.20						12.11								0.71
2	2.87	8.49						12.49								
3	1.89	7.85						2.67								18.53
4																
5	1.52	8.26						3.35								18.97
6	1.93	7.75						2.65								19.07
7	2.31	8.46						3.81								19.19
8	2.85	7.88						3.72								18.86
9	2.79	8.29						6.26								18.58
10	1.91	7.88						2.91								19.09
11	1.32	7.65						2.11								19.05
12	2.61	8.27						10.77								0.96
13																
14	2.06	8.20						4.40								18.76
15																
16																
17																0.87
18	2.53	7.82						5.38								18.87
19	1.44	8.38						2.34								18.89
20	1.99	8.01						2.97								19.22
21																
22	1.04	8.59						1.70								
23	1.65	7.83						3.76								18.91
24	1.48	7.95						2.45								19.16
25	2.93	7.85						13.12								20.21
26																
27																
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Appendix A (Continued).

WEEK# 26 8/12/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.53	8.19						9.85								0.98
2	2.33	8.74						8.37								
3	2.65	7.69						3.53								18.69
4																
5	1.51	8.66						3.38								19.05
6	1.88	8.72						2.51								19.07
7	2.33	8.24						3.92								19.23
8	3.43	8.24						4.54								18.87
9	3.05	8.47						6.89								18.65
10	1.79	8.50						2.91								19.11
11	1.16	8.61						1.73								19.07
12	2.47	8.36						9.61								1.14
13																
14	1.92	8.47						4.50								18.90
15																
16	1.72	8.19						6.00								0.95
17																
18	2.94	8.23						6.46								18.95
19	1.44	8.23						2.24								18.88
20	1.75	8.14						2.98								19.41
21																
22	1.13	8.59						1.60								
23	1.45	8.61						2.36								18.90
24	1.58	8.58						2.70								19.58
25	3.00	7.92						12.98								20.11
26																
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Appendix A (Continued).

WEEK# 27 8/19/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.71	7.18						11.15								0.80
2	2.66	8.19						10.60								
3	2.58	7.35						3.28								18.59
4																
5	1.53	8.26						3.25								19.07
6	2.00	8.06						2.47								19.15
7	2.45	7.28						3.77								19.32
8	2.20	7.19						2.82								19.07
9	2.29	7.53						4.48								18.65
10	1.90	7.30						2.62								19.27
11	1.35	8.57						2.15								19.30
12	2.48	8.28						9.71								1.07
13																
14	1.92	8.41						3.90								18.85
15																
16	1.71	8.35						6.11								0.94
17																
18	2.24	7.69						4.65								18.91
19	1.45	7.89						2.08								19.04
20	0.50	8.24						2.81								19.34
21																
22	0.86	8.24						1.22								
23	1.75	7.71						2.50								19.16
24	2.17	7.83						2.91								19.29
25	3.07	7.39						13.51								20.05
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Appendix A (Continued).

WEEK# 28 8/26/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.80	7.91	17.15	8.38	3.72	0.27	29.52	12.18		4.58	12.08	28.84	0.25	0.01	1909.	0.83
2	2.79	7.85	14.80	9.51	3.96	0.25	28.52	11.89		5.16	11.88	28.93	0.05	0.03	1896.	
3	2.35	7.16	11.50	10.86	3.66	0.28	26.30	3.48		9.12	14.40	27.00	0.05	0.01	1909.	18.56
4																
5	1.63	7.74	6.50	7.93	1.94	0.44	16.81	3.68		5.76	8.04	17.48	6.10	0.01	1217.	18.99
6	2.27	7.61	10.40	11.09	3.85	0.31	25.65	2.94		7.24	16.12	26.30	0.12	0.01	1840.	19.05
7	2.50	7.88	12.15	12.45	4.15	0.26	29.01	4.27		8.50	15.92	28.69	8.35	0.01	2024.	19.22
8	3.81	7.87	25.32	13.06	5.44	0.40	44.22	5.02		9.80	31.30	46.12		0.01	3205.	18.85
9	3.34	7.83	19.94	11.70	4.98	0.36	36.98	1.44		7.54	23.90	38.88		0.01	2639.	18.59
10	1.89	7.72	9.08	7.36	2.60	0.18	19.22	2.77		8.26	8.64	19.67		0.01	1412.	19.12
11	1.30	7.69	6.28	5.23	1.14	0.18	12.92	2.08		5.52	5.72	13.32	0.25	0.01	955.	19.08
12	2.52	7.87	14.25	7.33	2.98	0.24	24.80	10.33		4.54	10.92	25.79	0.40	0.01	1688.	1.12
13																
14	2.23	7.38	9.40	13.51	2.15	0.14	25.20	4.86		8.16	11.48	24.50	0.05	0.01	1740.	18.77
15																
16	1.74	7.84	9.56	5.20	1.99	0.17	16.92	6.22		4.74	6.84	17.80	0.05	0.01	1193.	0.99
17																
18	1.72	7.55	8.26	6.49	2.39	0.59	17.73	3.30		6.69	8.16	18.42	0.10	0.03	1289.	18.91
19	1.42	7.37	6.90	6.08	1.90	0.21	15.09	2.11		7.74	6.04	15.89		0.01	1149.	18.91
20	1.24	7.57	5.96	4.94	1.68	0.18	12.76	1.59		5.70	5.88	13.17		0.01	950.	19.26
21																
22	0.86	8.08	3.94	3.48	1.04	0.16	8.62	1.23		3.68	4.02	8.93	2.45	0.34	640.	
23	2.14	7.68	9.80	11.02	3.03	0.23	24.08	3.42		7.58	12.92	23.92	3.10	0.01	1696.	18.94
24	2.06	8.54	9.80	8.53	2.43	0.51	21.27	3.37		7.04	12.20	22.61	0.05	0.01	1581.	19.21
25	3.12	7.88	19.18	7.70	3.53	0.29	30.70	13.78		3.76	14.50	32.04	0.35	0.01	2064.	20.34
26																
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Appendix A (Continued).

WEEK# 29 9/ 2/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.66	8.53						10.80								0.89
2	1.68	7.73						4.98								18.56
3	2.66	7.10						3.72								19.00
4																18.99
5	1.69	7.51						3.37								19.15
6	2.43	7.38						2.99								18.98
7	2.62	7.54						4.24								18.57
8	3.88	7.56						4.81								19.03
9	3.48	7.41						7.93								19.00
10	1.86	7.61						2.58								1.17
11	1.33	7.13						2.21								18.79
12	2.56	7.64						10.04								1.00
13																18.92
14	2.43	7.49						5.21								18.82
15																19.19
16	1.69	7.91						5.76								
17																
18	3.78	7.44						8.22								18.86
19	1.40	7.32						2.03								19.15
20	1.43	7.43						1.87								20.12
21																
22	0.98	7.92						1.58								
23	1.89	7.68						2.88								
24	2.37	7.47						3.40								
25	3.12	7.64						13.48								
26																
27																
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Appendix A (Continued).

WEEK# 30 9/ 9/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.89	7.95						12.20								0.98
2	2.67	7.97						10.22								
3																
4																
5	1.55	7.76						2.91								19.07
6	2.47	7.25						3.06								19.04
7	2.41	7.30						3.98								19.20
8	3.79	7.52						4.94								18.85
9	3.39	8.24						6.14								18.64
10	1.61	7.31						2.34								19.05
11	1.32	7.64						2.28								19.01
12	2.67	7.86						10.64								1.27
13																
14	2.45	7.65						5.13								18.87
15																
16	1.81	7.07						6.45								1.04
17																
18	4.48	7.43						10.78								18.99
19	1.37	7.37						2.12								18.84
20	1.62	7.81						2.29								19.23
21																
22	0.90	8.21						1.36								
23	1.89	7.65						3.12								18.86
24	2.54	7.34						3.63								19.23
25	3.05	7.64						13.69								20.05
26																
27																
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Appendix A (Continued).

WEEK# 31 9/16/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.85	7.61						11.50								0.97
2	2.73	7.77						10.56								
3	1.89	7.33						2.62								18.64
4																
5	1.46	7.60						2.86								19.16
6	2.10	7.44						2.06								19.30
7	2.28	7.78						3.85								19.45
8	3.31	7.53						4.44								19.13
9	2.81	7.00						5.27								18.82
10	1.77	7.37						2.63								19.57
11	1.90	7.47						3.32								19.64
12	2.66	7.18						10.40								1.19
13																
14	2.39	7.32						4.79								18.93
15																
16																
17																
18																
19	1.46	7.20						2.13								19.43
20	1.63	7.39						2.42								19.56
21																
22	0.94	7.97						1.42								
23	1.40	8.14						2.18								19.58
24	3.11	7.13						4.56								19.49
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Appendix A (Continued).

WEEK# 32 9/23/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.80	7.47						11.00								0.91
2	1.50	8.38						4.03								
3	1.51	8.05						2.53								18.59
4																
5	1.30	8.12						2.76								19.06
6	2.03	7.80						2.06								19.14
7	2.33	8.16						4.06								19.33
8	3.33	7.92						4.50								18.95
9	3.29	7.81						8.52								18.67
10	1.66	7.88						2.55								19.30
11	1.68	8.02						3.25								19.27
12	2.57	8.32						9.86								1.19
13																
14	2.11	8.04						9.51								18.86
15																
16	1.86	7.90						6.48								1.16
17																
18	2.79	7.78						6.11								19.10
19	1.33	7.19						2.11								19.16
20	1.69	8.26						2.34								19.38
21																
22	0.96	8.50						1.25								
23	1.27	8.03						2.04								19.15
24	3.06	7.57						4.14								19.33
25	3.07	7.75						14.37								20.23
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Appendix A (Continued).

WEEK# 33 9/30/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.93	7.75	15.96	8.74	3.78	0.25	28.73	11.51		4.74	12.00	28.25	0.80	0.03	1871.	0.87
2	2.57	7.22	12.98	8.65	3.40	0.24	25.27	9.36		4.12	11.36	24.84	0.30	0.02	1651.	
3	3.03	7.66	14.54	13.89	4.55	0.27	33.25	3.70		11.82	19.30	34.82	0.05	0.01	2458.	18.73
4																
5	1.46	7.59	6.18	6.10	1.56	0.61	14.45	2.54		5.60	7.04	15.18	3.15	0.01	1077.	19.16
6	2.12	7.70	7.60	11.29	3.74	0.27	22.90	2.43		6.34	13.72	22.49	1.05	0.02	1589.	19.29
7	2.62	7.75	10.64	13.54	5.12	0.23	29.53	3.81		9.12	16.52	29.45		0.31	2072.	19.42
8	3.71	7.61	21.10	12.76	5.07	0.36	40.29	4.75		9.54	27.84	42.13		0.01	2904.	18.98
9	3.67	7.42	19.74	11.77	5.16	0.58	37.25	9.05		7.72	22.40	39.17	0.05	0.01	2643.	18.69
10	1.77	7.61	8.34	7.08	2.48	0.17	18.07	2.59		9.22	7.20	19.01	0.20	0.01	1371.	19.26
11	1.56	7.63	7.64	6.86	1.47	0.18	16.52	2.49		5.46	8.48	16.43	4.75	0.02	1167.	19.20
12	2.56	7.80	13.80	8.65	3.43	0.24	26.12	9.49		4.74	11.52	25.75	0.55	0.02	1721.	1.17
13																
14	2.21	8.10	9.42	12.24	1.92	0.19	23.77	3.95		8.14	11.44	23.53	0.05	0.01	1679.	18.90
15																
16	1.83	7.89	10.08	5.82	2.24	0.19	18.33	6.26		4.38	7.28	17.92	0.30	0.01	1222.	1.15
17																
18	1.94	7.56	8.70	7.65	2.90	0.61	19.86	3.46		6.68	10.60	20.74	0.05	0.01	1452.	18.99
19	1.47	7.59	7.19	6.20	1.95	0.19	15.53	2.16		7.40	6.64	16.20	0.05	0.01	1168.	19.02
20	1.39	7.70	6.76	5.56	2.30	0.20	14.82	2.05		4.28	8.36	14.69	0.05	0.01	1038.	19.40
21																
22	1.11	7.59	5.04	7.08	1.39	0.18	13.69	1.99		6.56	5.28	13.83	0.46	0.12	1006.	
23	1.42	7.63	6.56	5.96	1.63	0.17	14.32	2.03		5.76	7.24	15.03	4.75	0.01	1068.	19.03
24	3.04	7.59	10.46	17.10	5.07	0.82	33.45	4.18		8.30	21.40	33.56	0.35	0.01	2359.	19.32
25	3.26	7.96	20.56	8.40	3.60	0.30	32.86	14.04		3.52	15.60	33.16	0.15	0.01	2158.	20.15
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Appendix A (Continued).

WEEK# 34 10/ 7/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.92	7.54						11.52								0.83
2	2.75	7.65						10.47								
3	3.12	7.36						3.83								18.61
4																
5	1.44	7.56						2.43								19.03
6	2.64	7.50						3.02								19.08
7	2.46	7.60						4.13								19.25
8	3.72	7.40						4.82								18.88
9	3.63	7.50						8.93								18.62
10	1.80	7.52						2.56								19.14
11	1.58	7.52						2.52								19.08
12	2.62	7.85						9.86								1.12
13																
14	2.28	7.66						3.98								18.81
15																
16	1.79	7.88						6.02								1.14
17																
18	3.49	7.49						7.19								18.97
19	1.47	7.35						2.12								18.93
20	1.63	7.60						2.42								19.27
21																
22	1.00	8.17						1.61								
23	1.44	7.62						2.00								18.94
24	3.41	7.24						4.82								19.23
25	3.26	7.44						13.92								20.31
26																
27																
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Appendix A (Continued).

WEEK# 35 10/14/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1																
2	2.79	7.93						11.26								0.76
3	2.64	7.39						3.45								
4																18.55
5	1.46	7.51						2.47								18.98
6	2.66	7.72						3.00								19.03
7	2.52	7.48						4.26								19.20
8	3.66	7.22						4.85								18.84
9	3.65	7.20						9.00								18.60
10	1.77	7.36						2.65								19.08
11	1.29	7.75						1.97								19.04
12	2.56	8.40						9.91								1.04
13																
14	2.24	7.65						3.96								18.77
15																
16	1.77	7.91						6.10								1.18
17																
18	4.09	7.29						9.00								18.97
19	1.42	7.65						2.10								18.72
20	1.86	7.97						2.80								19.39
21																
22	0.89	8.10						1.41								
23	1.44	8.05						2.07								18.89
24	3.55	7.69						5.23								19.19
25	3.22	8.07						14.06								20.20
26																
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Appendix A (Continued).

WEEK# 36 10/21/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.65	7.88	16.02	6.59	3.60	0.31	28.52	10.80		4.62	11.72	28.14	0.80	0.04	1824.	0.77
2	1.42	7.66	7.70	6.30	2.32	0.48	16.80	4.91		4.88	6.72	16.51	2.10	0.22	1145.	
3																18.58
4																
5																19.19
6																19.17
7	2.80	8.02	13.95	12.59	4.68	0.25	31.47	4.82		8.50	18.20	31.52	1.20	0.02	2203.	19.20
8	2.24	7.29	12.92	7.19	3.33	0.37	23.81	3.14		7.08	12.88	23.10		0.01	1658.	19.03
9	2.73	7.76	16.68	10.61	0.49	0.34	28.12	6.61		6.82	15.32	28.75	0.45	0.01	2002.	18.72
10	1.99	7.66	9.96	8.88	3.30	0.21	22.35	3.01		9.92	9.08	22.01			1603.	19.35
11	1.28	7.91	6.29	5.64	1.34	0.20	13.47	2.06		5.06	5.76	12.92	0.20		940.	19.02
12	2.79	8.01	13.95	6.99	3.60	0.24	26.78	11.11		4.84	10.16	26.11	0.55	0.04	1731.	1.07
13																
14	2.26	7.73	10.00	12.90	1.86	0.13	24.89	3.94		9.12	10.92	23.98		0.01	1737.	18.89
15																
16	1.74	7.25	9.66	6.88	2.55	0.20	19.29	7.16		4.62	6.84	18.62		0.02	1263.	1.12
17																
18	4.28	7.24	23.24	20.37	8.44	0.92	52.97	12.77		9.22	30.08	52.07		0.01	3541.	18.96
19	1.40	7.99	6.90	7.10	2.26	0.22	16.48	2.14		7.74	6.24	16.12		0.01	1185.	19.23
20	2.10	7.85	11.26	9.30	3.22	0.24	24.02	3.24		10.66	9.64	23.54	0.25		1722.	19.21
21																
22	0.94	8.32	4.36	4.28	1.36	0.19	10.19	3.33	0.20	4.00	2.80	10.33	1.35	0.20	713.	
23	1.59	7.86	7.14	7.07	2.05	0.19	16.45	3.89		6.96	6.00	16.85	6.65	0.01	1189.	18.87
24	3.66	7.77	13.08	21.01	6.95	0.61	41.65	5.22		9.90	25.80	41.70		0.01	2858.	19.18
25	3.43	7.82	21.00	9.03	3.84	0.28	34.15	15.17		3.56	14.88	33.61	0.20	0.01	2191.	20.14
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Appendix A (Continued).

WEEK# 37 10/28/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.53	8.19						11.50								0.75
2	2.37	7.94						10.22								
3	2.55	7.39						3.81								18.59
4																
5	1.52	7.87						2.99								19.05
6	1.88	7.59						2.12								19.14
7	2.20	7.90						4.22								19.28
8	2.80	7.55						4.20								18.97
9	3.00	8.02						8.67								18.67
10	1.57	7.72						2.64								19.36
11	1.14	8.25						2.13								19.43
12	2.27	7.36						10.16								1.08
13																
14	1.86	8.13						3.75								18.84
15																
16	1.46	7.86						5.54								1.12
17																
18	4.11	7.34						9.99								18.96
19	1.23	8.18						1.99								19.14
20	1.74	8.13						3.02								19.41
21																
22	0.84	8.23						1.44								
23	1.20	8.06						1.89								19.30
24	2.91	7.70						3.96								19.38
25																20.10
26																
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Appendix A (Continued).

WEEK# 38 11/ 4/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.68	7.56						12.19								
2	2.65	8.16						10.82								0.74
3	3.15	7.50						4.39								
4																18.55
5	1.73	7.81						3.02								
6	2.43	7.53						2.98								18.98
7	2.62	7.75						4.70								19.05
8	3.30	7.50						4.83								19.20
9	3.45	7.58						8.14								18.89
10	2.39	7.70						4.54								18.62
11	1.26	7.73						2.07								19.20
12	2.48	7.85						10.07								19.15
13																1.07
14	2.24	7.74						4.25								
15																18.78
16	1.68	8.01						5.89								
17																1.10
18	4.48	7.44						10.13								
19	1.41	7.71						2.27								18.96
20	2.03	7.94						3.19								19.00
21																19.27
22	1.39	8.23						3.79								
23	1.30	7.79						1.95								
24	3.16	7.73						3.98								19.03
25	3.07	8.26						14.00								19.22
26																20.05
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Appendix A (Continued).

WEEK# 39 11/11/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.82	8.08						11.41								
2	2.72	8.04						10.55								0.73
3	3.38	7.41						4.32								
4																18.53
5	1.94	7.66						3.08								
6	2.71	7.37						3.01								18.94
7	2.70	7.48						4.55								18.99
8	3.45	7.11						4.64								19.15
9	3.46	7.46						8.52								18.83
10	3.22	7.63						6.95								18.58
11	1.17	7.77						1.74								19.08
12	2.48	7.97						9.48								19.05
13																1.04
14	2.40	7.87						4.54								
15																18.76
16	1.69	8.08						5.69								
17																1.09
18	4.56	7.16						9.81								
19	1.41	7.24						2.06								18.95
20	2.11	7.76						3.17								18.88
21																19.19
22	1.50	8.14						4.34								
23	1.31	7.63						1.80								
24	3.32	1.43						3.95								19.04
25	3.10	7.58						13.04								19.22
26																20.05
27																
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Appendix A (Continued).

WEEK# 40 11/18/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.95	8.38						13.05								0.75
2	2.75	7.13						11.81								
3	3.42	7.36						4.93								18.52
4																
5	2.11	7.41						3.91								18.92
6	2.88	7.81						3.40								18.96
7	2.77	7.20						5.26								19.12
8	3.52	7.19						5.23								18.80
9	3.46	7.96						9.52								18.56
10	2.90	8.14						5.90								19.02
11	1.34	8.29						2.07								18.99
12	2.62	8.46						10.86								1.06
13																
14	2.57	8.14						5.63								18.73
15																
16	1.74	7.89						6.20								0.99
17																
18	4.69	7.19						11.37								18.93
19	1.46	7.91						2.36								18.83
20	2.16	8.08						3.70								19.16
21																
22	1.50	8.38						4.34								
23	1.44	8.18						2.25								18.86
24	3.26	8.25						4.23								19.14
25	3.16	7.46						14.89								20.00
26																
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Appendix A (Continued).

WEEK# 41 11/25/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.84	7.67						12.49								0.74
2	2.68	7.91						11.09								
3	3.46	8.18						4.74								18.53
4																
5	1.85	7.90						3.25								18.91
6	2.98	7.22						3.27								18.98
7	2.34	7.93						4.53								19.11
8	3.51	6.99						5.05								18.77
9	3.49	8.26						8.71								18.55
10	2.07	7.12						3.45								19.00
11	1.27	8.23						1.99								18.97
12	2.45	7.97						10.31								1.08
13																
14	2.74	8.13						5.95								18.72
15																
16	1.67	8.50						5.80								0.93
17																
18	4.67	8.15						10.63								18.91
19	1.35	8.35						2.19								18.80
20	2.27	7.79						3.52								19.15
21																
22	1.38	8.49						3.84								
23	1.38	7.28						2.01								18.83
24	3.10	8.10						3.98								19.13
25	3.09	8.26						13.26								19.98
26																
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Appendix A (Continued).

WEEK# 42 12/ 2/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.94	7.91	17.71	9.58	4.18	0.28	31.75	12.62		4.52	13.72	30.86	0.70	0.06	2043.	0.75
2	2.72	7.82	14.85	10.46	4.08	0.27	29.66	11.14		5.16	12.00	28.30	0.06	0.02	1897.	
3	3.52	7.11	22.03	12.62	4.42	0.38	39.45	4.80		9.46	24.90	39.16	0.04	0.01	2771.	18.54
4																
5	1.67	7.69	7.36	7.84	1.90	0.38	17.48	2.76		5.32	4.56	17.64	18.50	0.04	1006.	18.91
6	2.94	7.31	13.74	17.35	7.32	0.39	38.80	3.33		9.60	24.70	37.63	0.07	0.02	2658.	18.94
7	2.35	7.60	11.96	12.00	3.54	0.29	27.79	4.06		9.00	14.00	27.06	0.35	0.01	1935.	19.11
8	3.52	7.31	22.38	8.41	5.51	0.34	37.59	5.03		3.46	29.10	37.59	0.10	0.14	2550.	18.76
9	3.45	7.54	21.32	13.07	6.38	0.33	41.10	8.51		7.80	24.70	41.01	0.03	0.02	2806.	18.55
10	1.71	7.35	8.90	7.03	2.20	0.22	18.35	2.72		7.76	8.20	18.68	0.12	0.01	1345.	18.98
11	1.26	7.49	6.52	5.30	1.68	0.16	13.66	2.05		5.30	6.36	13.71	4.75	0.01	984.	18.96
12	2.52	7.91	12.64	8.56	3.44	0.25	24.89	10.23		4.58	11.12	25.93	0.85	0.02	1690.	1.06
13																
14	2.48	7.49	11.19	15.29	2.50	0.14	29.12	5.08		8.46	14.88	28.42	0.11	0.01	2010.	18.72
15																
16	1.67	7.97	8.89	5.56	2.06	0.18	16.69	5.96		4.52	6.84	17.32	0.25	0.03	1163.	0.87
17																
18	4.64	7.20	23.10	24.93	10.48	0.86	59.37	10.01		9.04	37.80	57.45	0.12	0.01	3914.	18.89
19	1.43	7.29	6.48	7.07	2.10	0.22	15.87	4.21		7.46	6.16	15.83	0.20	0.01	1154.	18.79
20	2.28	7.66	14.14	10.39	3.74	0.22	28.49	3.72		12.54	11.32	27.58	0.06	0.01	2028.	19.14
21																
22	1.38	7.52	7.86	4.02	1.58	0.20	13.66	3.78		4.08	6.48	14.34	0.40	0.08	982.	
23	1.41	7.60	7.24	5.75	1.65	0.22	14.86	2.09		6.62	7.00	15.71	9.40	0.04	1125.	18.82
24	3.20	7.17	14.47	18.83	5.81	0.57	39.68	3.90		9.08	27.80	40.78	1.20	0.02	2830.	19.12
25	3.07	7.43	18.72	6.20	3.57	0.27	30.76	13.40		3.64	14.32	31.36	0.70	0.01	2034.	19.97
26																
27																
28																
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Appendix A (Continued).

WEEK# 43 12/ 9/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1																
2	2.58	8.38						11.39								
3	3.38	8.33						4.84								
4																18.53
5	1.46	8.93						2.67								
6	2.72	8.12						3.29								18.90
7	2.19	8.09						4.10								18.94
8	3.26	8.32						5.03								19.09
9	3.33	8.56						8.73								18.76
10	1.54	8.39						2.74								18.55
11	1.27	8.90						2.17								18.98
12	2.40	8.70						9.85								18.95
13																1.08
14	2.14	8.43						4.41								
15																18.72
16	1.57	8.83						5.50								
17																0.85
18																
19	1.32	8.36						5.50								18.89
20	2.08	8.51						4.10								18.78
21																19.14
22	1.33	8.49						3.69								
23	1.37	8.99						2.03								
24	2.61	7.29						3.65								18.82
25	2.96	8.72						13.34								19.12
26																19.96
27																
28																
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Appendix A (Continued).

WEEK# 44 12/16/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.92	8.20						12.48								0.76
2	2.78	8.43						11.41								
3	3.51	7.32						5.28								18.55
4																
5	1.46	8.56						2.74								18.90
6	2.79	7.49						3.21								18.94
7	2.46	7.83						4.19								19.04
8	3.45	7.57						5.01								18.77
9	3.51	7.77						8.90								18.55
10	1.63	8.10						2.71								18.99
11	1.43	7.97						2.26								18.95
12	2.57	8.75						10.35								1.06
13																
14	2.28	7.83						4.04								18.72
15																
16	1.72	7.80						6.07								0.80
17																
18	4.87	7.94						10.35								18.86
19	1.56	7.74						2.41								18.78
20																19.13
21																
22	1.31	8.34						3.43								
23	1.39	7.93						1.91								18.81
24	3.32	7.83						3.33								19.12
25	3.00	8.28						12.72								19.95
26																
27																
28																
29																
30																
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Appendix A (Continued).

WEEK# 45 12/23/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.69	7.74	15.98	8.39	3.70	0.26	28.33	12.26		4.50	11.05	27.81	0.80	0.01	1831.	0.81
2	2.72	7.57	15.79	8.28	4.24	0.29	28.60	11.90		5.60	10.53	28.03	0.05	0.01	1861.	
3	3.27	7.38	20.90	12.98	4.87	0.39	39.14	4.81		10.04	23.80	38.65	0.05	0.01	2741.	18.56
4																
5	1.44	7.53	6.86	6.81	1.69	0.32	15.68	2.68		5.32	7.65	15.65	9.35	0.01	1114.	18.92
6	2.49	7.45	10.72	12.59	6.94	0.33	30.58	3.08		9.28	17.48	29.84	0.10	0.02	2111.	19.95
7	2.18	7.57	10.81	11.40	3.15	0.26	25.62	4.15		8.92	12.49	25.56	0.05	0.01	1817.	19.11
8	3.37	7.47	21.10	12.35	5.24	0.35	39.04	5.12		9.22	24.58	38.92	0.15	0.01	2735.	18.78
9	3.32	7.48	19.36	11.72	5.99	0.31	37.38	8.92		7.72	10.73	37.37	0.05	0.01	2067.	18.57
10	1.58	7.42	9.42	9.29	2.06	0.23	18.00	2.72		8.44	7.24	18.40	0.05	0.01	1336.	18.98
11	1.45	7.41	6.50	7.45	1.68	0.18	15.81	2.55		6.40	7.50	16.45	6.10	0.01	1167.	18.96
12	2.34	7.71	13.35	8.31	3.44	0.24	25.34	10.39		4.46	9.79	24.64	0.75	0.02	1635.	1.16
13																
14	2.12	7.35	9.54	12.23	2.23	0.12	24.12	4.06	.	8.82	11.60	24.48		0.01	1735.	18.74
15																
16	1.54	7.62	8.40	5.35	2.06	0.17	15.98	5.83		4.40	5.84	16.07	0.12	0.02	1088.	0.84
17																
18	4.72	6.87	24.17	22.96	9.76	0.87	57.76	11.16		10.48	31.70	59.34	0.05	0.01	3726.	18.88
19	1.48	6.78	6.66	7.37	2.41	0.30	16.74	2.57		8.26	5.91	16.74	3.60	0.01	1221.	18.79
20	2.24	6.89	12.24	9.94	3.51	0.21	25.90	4.26		11.44	10.83	26.53	0.05	0.01	1901.	19.15
21																
22	1.20	7.30	7.18	3.78	1.47	0.18	12.61	3.52		3.94	5.18	12.64	0.55	0.08	880.	
23	1.33	6.99	7.14	5.43	1.55	0.15	14.27	1.96		6.66	6.06	14.68	9.50	0.01	1065.	18.82
24	3.08	6.77	12.36	18.69	6.11	0.55	37.71	3.29		6.60	24.62	63.51	2.75	0.01	2578.	19.13
25	2.71	7.04	16.28	7.56	3.40	0.26	27.50	12.22		3.38	12.05	27.65	0.15	0.01	1795.	19.95
26																
27																
28																
29																
30																
31																
32																
33																
35																
51	2.52	7.29	12.45	8.86	5.48	0.37	27.16	4.60	.	7.54	16.36	28.48	0.35	0.01	1954.	19.03
52																
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Appendix A (Continued).

WEEK# 46 12/30/77

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.94	7.80						12.99								
2	2.64	8.15						10.59								0.84
3	3.32	7.34						4.58								
4																18.62
5	1.51	7.79						2.52								
6	2.49	7.85						4.96								18.93
7	2.24	7.91						3.78								18.96
8	3.43	7.73						4.93								19.12
9	3.27	7.97						8.01								18.80
10	1.61	7.70						2.63								18.58
11	1.55	7.88						2.52								18.99
12	2.43	8.07						9.84								18.96
13																1.12
14	2.25	7.85						4.04								
15																18.76
16	1.70	8.00						6.14								
17	1.74	7.66						3.14								0.81
18	5.00	7.48						11.45								19.05
19	1.54	7.71						2.52								18.88
20	2.35	7.70						4.23								18.80
21																19.15
22	1.25	8.37						3.36								
23	1.38	7.97						2.02								
24	3.11	7.69						5.10								18.83
25	2.81	7.80						12.59								19.13
26																19.95
27	3.82	8.10						18.96								
28																20.00
29																
30																
31																
32																
33																
34																
35																
51	3.02	7.44						7.71								
52																19.04
53																
54																
55																
56																
57																
58																
59																
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Appendix A (Continued).

WEEK# 47 1/ 6/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1																0.85
2	2.71	8.52						10.42								
3	3.36	7.39						4.70								18.55
4																
5	1.46	8.02						2.55								18.94
6	2.39	8.09						2.94								18.96
7																19.12
8	3.50	7.69						5.00								18.79
9	3.32	8.11						8.39								18.57
10	1.63	7.51						2.66								18.99
11	1.62	7.87						2.61								18.96
12	2.54	7.77						10.45								1.10
13																
14	2.30	7.55						4.26								18.76
15																
16	1.61	7.57						5.71								0.82
17	1.62	8.35						2.77								19.04
18																18.88
19	1.46	7.47						2.37								18.80
20	2.33	7.92						4.28								19.15
21																
22																
23	1.37	7.71						2.01								18.82
24	2.89	7.33						4.99								19.12
25	2.84	7.74						12.26								19.94
26																
27	3.84	7.52						18.55								20.00
28																
29																
30																
31																
32																
33																
35																
51	2.96	7.43						8.37								19.04
52																
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54																
55																
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57																
58																
59																
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Appendix A (Continued).

WEEK# 48 1/13/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1																0.85
2																18.58
3																18.94
4																19.00
5																19.12
6																18.79
7																18.58
8																18.99
9																18.96
10																1.12
11																18.75
12																0.86
13																19.06
14																18.88
15																18.80
16																19.16
17																18.82
18																19.14
19																19.94
20																
21																
22																
23																
24																
25																
26																
27																
28																
29																
30																19.04
31																
32																
33																
34																
35																
36																
37																
38																
39																
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Appendix A (Continued).

WEEK# 49 1/20/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.79	8.39	17.37	8.93	3.90	0.27	30.47	12.71	0.84	3.86	11.26	28.67	0.70	0.07	1888.	0.86
2	2.57	8.27	14.16	8.23	4.12	0.25	26.76	11.04		4.56	10.67	26.27		0.06	1732.	
3	3.02	8.56	19.17	11.33	4.21	0.33	35.04	4.66	1.60	7.18	21.11	34.55		0.06	2397.	18.58
4	1.96	8.36	11.67	8.12	2.96	0.15	22.90	5.79	1.16	4.18	9.93	21.06		0.06	1445.	18.86
5	1.42	8.47	7.42	7.11	1.68	0.31	16.52	2.51	1.20	4.90	7.33	15.94	7.70	0.05	1122.	18.94
6	2.26	8.26	9.98	12.08	6.70	0.28	29.04	2.87		9.60	15.74	28.21	0.10	0.04	2007.	18.97
7	2.05	8.48	10.09	11.01	2.85	0.25	24.20	3.75	0.56	7.78	11.04	23.13	0.05	0.04	1652.	19.12
8	3.29	8.19	20.59	11.02	5.20	0.28	37.09	5.02		7.40	24.04	36.46	0.05	0.04	2554.	18.80
9	3.01	8.03	18.34	10.69	5.62	0.26	34.91	7.70		6.04	19.93	33.67		0.04	2313.	18.62
10	1.48	8.19	9.04	5.62	2.11	0.22	16.99	2.54		7.10	6.89	16.53	0.05	0.03	1209.	18.99
11	1.47	8.01	6.75	7.86	1.72	0.17	16.50	2.46		5.80	7.63	15.89	0.80	0.03	1148.	18.96
12	2.34	8.41	13.15	8.40	3.45	0.23	25.23	10.21	0.84	3.46	10.19	24.54	0.60	0.03	1609.	1.12
13	2.64	8.31	16.89	7.21	3.42	0.24	27.75	12.51	0.48	3.34	10.63	26.96	5.40	0.02	1756.	18.98
14	2.13	8.02	10.17	10.68	2.52	0.11	23.48	4.16	0.80	5.76	11.96	22.68	0.05	0.02	1580.	18.76
15	2.63	8.41	15.16	11.86	2.44	0.26	29.72	8.38	0.84	9.24	15.93	28.39	2.00	0.01	1962.	19.08
16	1.45	8.46	8.92	5.44	1.96	0.17	16.49	5.72	0.92	3.22	5.93	15.79	0.15	0.02	1056.	0.87
17	1.39	8.17	5.91	7.71	2.29	0.14	16.05	2.54		6.10	6.76	15.04	10.20	0.01	1111.	19.06
18	4.63	8.09	25.13	24.96	10.54	0.80	61.43	11.00		12.36	37.22	60.58	0.15		4169.	18.87
19	1.16	8.59	7.47	5.52	2.22	0.19	15.40	2.35	1.08	5.54	6.00	14.97	0.05		1059.	18.80
20	2.18	8.38	11.40	9.27	3.30	0.20	24.17	4.31	0.40	8.68	10.78	24.17			1708.	19.15
21																
22	1.26	8.65	7.65	3.61	1.38	0.18	12.82	3.31	0.68	3.28	5.09	12.36	0.30	0.06	854.	
23	1.34	8.08	6.13	5.94	1.56	0.13	13.76	1.97		5.98	5.94	13.89	7.80		1004.	18.83
24	3.34	8.43	10.20	10.17	5.35	0.47	32.19	2.82	1.16	7.64	19.70	31.32	9.40		2189.	19.13
25	2.71	8.30	18.02	7.78	3.38	0.28	29.46	12.19	0.56	2.52	13.03	28.30	0.55		1851.	19.96
26																
27	3.34	8.45	21.94	8.72	4.34	0.28	35.28	16.73	0.44	3.22	15.34	36.03	1.05		2282.	20.00
28																
29																
30																
31																
32																
33	1.22	8.71	8.92	2.72	1.87	0.29	13.80	2.38	1.28	4.78	4.89	13.33	0.05		943.	18.75
35	1.26	8.43	7.56	4.39	1.89	0.38	14.16	2.46	1.36	4.48	5.48	13.78	0.15		964.	19.24
51	2.98	8.28	15.69	14.06	6.41	0.33	36.49	8.30		6.28	20.26	34.84	0.05	0.02	2384.	19.03
52																
53																
54																
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58																
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Appendix A (Continued).

WEEK# 50 1/27/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.94	7.94						12.50								0.87
2	2.69	7.89						10.72								
3	3.22	7.33						5.14								18.59
4	2.08	7.62						5.76								18.87
5	1.50	7.81						2.65								18.94
6	2.49	7.71						2.96								19.00
7	2.22	7.81						3.85								19.13
8	3.54	7.53						5.70								18.80
9	3.26	7.89						8.22								18.59
10	1.58	7.68						2.50								19.00
11	1.58	7.83						2.45								18.97
12	2.49	7.94						10.24								1.14
13	2.82	7.24						12.50								18.98
14	2.28	7.77						3.97								18.76
15	2.84	7.61						6.31								19.08
16	1.57	8.03						5.41								0.90
17	1.65	7.93						2.90								19.08
18	4.95	7.65						11.07								18.90
19	1.36	7.15						2.01								18.80
20	2.37	7.82						4.41								19.16
21																
22	1.34	7.54						3.65								
23	1.36	7.89						1.96								18.83
24	2.72	7.65						2.87								19.14
25																
26																
27																
28																
29																
30																
31																
32																
33	1.40	7.87						2.29								18.74
35	1.33	8.33						2.40								19.26
51	3.33	7.83						11.38								19.04
52																
53																
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Appendix A (Continued).

WEEK# 51 2/ 3/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.93	7.97						12.59								0.88
2	2.68	8.25						10.64								
3	3.07	7.51						4.84								18.59
4	2.09	7.73						5.72								18.88
5	1.48	7.76						2.61								18.95
6	2.64	7.75						3.02								18.98
7	2.16	7.89						3.80								19.14
8	3.44	7.73						5.10								18.81
9	3.38	7.95						8.40								18.59
10	1.58	7.75						2.46								19.00
11	1.55	7.76						2.47								18.97
12	2.46	8.07						10.05								1.14
13	2.78	7.95						12.20								18.98
14	2.24	7.81						3.93								18.77
15	2.84	7.72						6.36								19.09
16	1.52	8.35						5.21								0.89
17	1.57	7.82						2.76								19.08
18	4.96	7.62						11.11								18.90
19	1.32	7.59						2.08								18.80
20	2.42	7.98						4.55								19.17
21																
22	1.17	7.87						2.94								
23	1.36	8.07						1.93								18.83
24	2.46	7.74						2.60								19.15
25																
26																
27																
28																
29																
30																
31																
32																
33	1.52	7.83						3.00								18.75
35	1.32	8.49						2.29								19.27
51	3.48	7.60						13.40								19.05
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Appendix A (Continued).

WEEK# 52 2/10/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.89	8.07						12.50								0.88
2	2.63	8.22						10.48								
3	2.94	7.64						4.70								18.60
4	2.02	8.11						5.62								18.99
5	1.47	7.98						2.65								18.96
6	2.61	8.07						3.04								19.00
7	2.17	8.22						3.83								19.15
8	3.53	7.89						5.28								18.81
9	3.25	8.09						8.02								18.59
10	1.61	7.82						2.44								19.01
11	1.55	8.03						4.50								18.97
12	2.51	7.90						10.47								1.13
13																18.98
14	2.21	7.85						3.83								18.77
15	2.87	7.98						6.34								19.10
16	1.60	8.04						5.54								0.88
17	1.57	8.19						2.80								19.07
18	4.97	7.49						11.05								18.90
19	1.28	7.74						1.96								18.81
20	2.32	8.03						4.22								19.18
21																
22	1.17	7.73						3.08								
23	1.34	8.04						1.93								18.83
24	2.30	7.86						2.53								19.15
25																
26																
27																
28																
29																
30																
31																
32																
33	1.46	7.82						2.26								
34	1.32	8.47						2.36								18.76
35	3.67	7.69						16.78								19.26
36																19.05
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Appendix A (Continued).

WEEK# 53 2/17/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.90	8.47	17.48	11.13	4.99	0.23	33.83	12.71	0.60	5.66	14.02	32.99	0.55	0.01	2182.	0.88
2	2.65	8.38	14.29	9.19	3.89	0.28	27.65	10.88	0.70	5.78	15.11	28.47	0.07	0.01	1812.	
3	3.00	7.69	18.72	12.00	3.72	0.29	34.73	4.84		9.06	21.62	35.52	0.05	0.02	2490.	18.61
4	2.11	8.41	10.87	8.57	3.14	0.13	22.71	5.60		5.78	11.23	22.61	0.18	0.05	1555.	18.90
5	2.54	8.23	6.35	8.30	1.46	0.29	14.40	2.66		8.78	7.05	14.79	8.30	0.01	1050.	18.97
6	3.43	7.98	10.38	12.59	2.67	0.28	29.39	3.06		5.18	18.40	30.24	0.10		2104.	19.00
7	3.15	8.15	10.77	10.61	2.91	0.25	24.30	3.97	0.48	8.78	12.55	24.98	0.06		1747.	19.16
8	3.20	8.16	23.20	12.27	6.14	0.29	40.67	5.26		7.98	25.96	39.86	0.04		2811.	18.83
9	3.54	8.19	18.82	11.92	2.23	0.26	37.94	8.09		8.64	21.85	37.14	0.02	0.01	2547.	18.61
10	1.51	8.30	7.87	7.20	1.95	0.17	17.51	2.41		7.20	6.78	17.93	0.04		1305.	19.02
11	2.47	8.24	6.73	7.74	3.08	0.22	16.59	2.65		8.74	8.25	16.76	1.30	0.01	1188.	18.98
12	2.76	8.28	14.39	7.76	3.42	0.22	25.46	10.41		5.86	10.34	24.77	0.60	0.01	1043.	1.16
13	2.03	8.24	17.76	7.36	2.12	0.09	28.76	12.61		4.02	11.66	27.38	5.70	0.01	1803.	18.99
14	2.75	8.20	14.16	12.04	5.00	0.17	23.41	3.66		3.12	11.70	23.46	0.25		1667.	18.79
15	1.55	8.50	9.04	12.59	1.93	0.15	32.52	9.20		8.10	17.08	31.52	0.22		2202.	19.11
16	1.55	8.15	7.30	5.36	2.10	0.13	10.48	5.57	0.32	8.24	6.00	15.73	0.10	0.01	1074.	0.90
17	4.96	7.73	26.75	7.24	10.55	0.80	16.77	2.94		3.84	6.59	17.29	8.45	0.01	1238.	19.10
18	1.27	8.26	5.53	25.04	1.85	0.17	63.14	11.32		7.76	41.16	62.00	0.15	0.01	4235.	18.90
19	2.31	8.46	12.46	6.26	3.70	0.18	13.81	1.98		9.52	5.54	14.24	0.07	0.01	1028.	18.82
20				10.64			26.98	4.23	1.08	10.46	11.78	27.55	0.25	0.01	1938.	19.19
21										6.72						
22	1.09	8.30	6.09	3.56	1.29	0.15	11.09	2.85		3.68	4.78	11.31	0.35	0.07	788.	
23	1.30	8.59	7.37	5.56	1.53	0.13	14.59	2.03	0.92	5.38	6.51	14.84	9.35	0.01	1045.	18.84
24	2.20	7.94	8.26	14.92	4.48	0.41	26.16	2.56		7.84	15.03	25.43	1.90	0.01	1811.	19.16
25	2.94	7.82	16.72	7.68	3.27	0.23	29.90	13.24		2.74	13.25	29.23	0.12	0.01	1906.	19.95
26																
27	3.66	8.24	24.74	8.95	4.37	0.26	38.32	17.57		4.08	15.88	37.53	0.75	0.01	2446.	20.02
28																
29																
30																
31	1.44	8.42	8.92	4.88	1.90	0.24	15.94	2.35	0.52	7.54	5.54	15.95	0.07	0.01	1160.	18.77
32	1.38	8.62	7.33	5.32	2.01	0.32	14.98	2.39	0.48	6.62	5.54	15.03	0.05		1081.	19.30
33	3.77	7.96	19.69	14.32	6.17	0.33	40.51	17.30		5.20	16.46	38.96	0.05	0.01	2549.	19.07
34																
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Appendix A (Continued).

WEEK# 54 2/24/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1																
2	2.76	8.53						12.36								0.88
3	2.86	7.30						4.64								18.61
4	2.09	7.80						5.67								18.91
5	1.41	7.81						2.67								18.97
6	2.54	7.40						3.12								19.00
7	2.13	7.57						3.80								19.17
8	3.40	7.47						5.19								18.83
9	3.18	7.62						7.92								18.60
10	1.55	7.61						2.43								19.03
11	1.47	7.69						2.52								18.99
12	2.40	7.87						10.31								1.19
13	2.73	7.57						12.59								19.00
14	2.02	7.73						3.54								18.79
15	2.64	8.31						6.10								19.09
16	1.51	8.01						5.25								0.91
17	1.56	7.83						3.06								19.10
18	5.05	7.31						11.37								18.90
19	1.30	8.42						1.97								18.82
20	2.25	8.17						4.14								19.20
21																
22	1.17	8.08						3.13								
23	1.28	7.93						1.82								18.84
24	2.20	7.37						2.68								19.17
25																
26																
27																
28																
29																
30																
31																
32																
33	1.41	7.86						2.29								18.79
35	1.28	8.38						2.33								19.30
51	3.15	7.32						17.70								19.07
52																
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Appendix A (Continued).

WEEK: 55 3/ 3/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.88	8.00						12.69								0.88
2	2.63	8.06						10.28								
3	2.95	7.37						4.62								18.62
4	2.13	8.23						4.97								18.91
5	1.97	7.96						2.74								18.98
6	2.62	7.71						3.09								19.00
7	2.19	7.83						3.77								19.17
8	3.50	7.67						5.14								18.83
9	3.25	7.80						7.80								18.60
10	1.61	7.75						2.44								19.02
11	1.45	7.65						2.41								19.00
12	2.47	7.28						10.47								1.24
13	2.78	7.93						12.46								19.01
14	2.09	7.74						3.53								18.79
15	2.83	7.67						6.07								19.09
16	1.59	7.90						5.44								0.92
17	1.58	7.81						3.02								19.11
18	5.07	7.45						11.42								18.91
19	1.37	7.70						2.01								18.82
20	2.35	7.98						4.03								19.18
21																
22	0.98	8.26						1.96								
23	1.33	7.85						1.80								18.84
24	2.20	7.75						2.63								19.17
25																
26																
27																
28																
29																
30																
31																
32																
33	1.49	7.71						2.40								18.78
35	1.40	7.85						2.28								19.31
51	3.78	7.61						18.13								19.04
52																
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Appendix A (Continued).

WEEK# 56 3/10/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.79	8.45						11.98								0.88
2	2.56	8.34						9.94								
3	2.92	7.95						4.65								18.61
4	2.19	8.01						5.43								18.91
5	1.50	8.33						2.79								18.98
6	2.66	8.06						3.13								19.00
7	2.20	8.38						3.76								19.18
8	3.55	7.85						5.16								18.82
9	3.16	8.30						7.63								18.59
10	1.60	8.06						2.54								19.03
11	1.34	8.13						2.34								19.00
12	2.41	8.35						10.10								1.22
13	2.83	8.30						12.36								19.00
14	2.09	7.83						3.66								18.79
15	2.73	8.35						6.01								19.11
16	1.55	8.21						5.28								0.92
17	1.43	8.50						3.06								19.11
18	5.00	7.76						11.24								18.91
19	1.35	8.20						1.95								18.82
20	2.29	8.41						3.95								19.21
21																
22	1.88	8.49						1.65								
23	1.25	8.38						1.75								18.84
24	2.08	8.06						2.56								19.18
25																
26																
27																
28																
29																
30																
31																
32																
33	1.41	8.11						2.34								18.79
54	1.32	8.26						2.26								19.31
51	3.69	8.28						17.72								19.08
52																
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Appendix A (Continued).

WEEK# 57 3/17/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.89	7.70						13.08								0.88
2	2.64	7.74						10.70								
3	2.91	7.35						4.71								18.62
4	2.23	7.76						5.47								18.92
5	1.45	8.31						3.08								18.98
6	2.67	7.58						3.14								19.00
7	2.22	8.06						3.73								19.18
8	3.44	7.61						5.36								18.81
9	3.16	7.78						7.85								18.59
10	1.61	7.71						2.23								19.03
11	1.28	7.67						2.15								18.99
12	2.42	7.83						10.53								1.24
13	2.78	7.92						13.09								19.00
14	2.12	7.54						3.37								18.78
15	2.78	7.78						5.28								19.13
16	1.57	7.79						3.48								0.92
17	1.57	7.77						3.23								19.14
18	5.00	7.53						11.77								18.91
19	1.47	7.34						2.29								18.62
20	2.27	7.87						4.11								19.22
21																
22	0.75	7.69						1.30								
23	1.24	7.88						1.76								18.84
24	2.11	7.69						2.64								19.18
25																
26																
27																
28																
29																
30																
31																
32																
33	1.44	7.69						2.40								18.80
35	1.31	7.82						2.23								19.34
51	3.66	7.75						18.94								19.08
52																
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK# 58 3/24/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.83	8.49	16.83	8.66	3.86	0.24	29.69	12.32	0.16	4.13	13.04	29.64	0.30	0.02	1937.	0.81
2	2.62	8.25	14.34	7.74	3.68	0.23	25.94	10.71		3.44	11.16	25.81		0.03	1664.	
3	2.92	7.88	18.97	9.79	3.72	0.27	32.75	4.78		8.44	19.56	32.78	0.06	0.02	2312.	18.62
4	2.26	8.02	11.58	7.26	3.40	0.15	24.39	5.53		8.16	11.08	24.79		0.02	1686.	18.92
5	1.49	8.13	6.23	7.35	1.80	0.28	15.63	2.90		5.46	7.40	15.76	7.90	0.03	1115.	18.98
6	2.78	8.11	11.18	13.44	6.98	0.28	31.88	3.28		8.64	20.00	31.92	0.10	0.02	2226.	19.01
7	2.34	8.23	10.42	12.30	3.24	0.25	25.91	3.99		8.36	13.56	25.91	0.05	0.02	1838.	19.19
8	3.51	8.11	22.77	11.80	4.96	0.27	41.33	5.66		8.38	26.60	40.64	0.05	0.02	2820.	18.82
9	3.24	8.28	18.11	11.97	6.34	0.35	36.60	8.02	0.24	7.10	21.32	36.68		0.01	2496.	18.59
10	1.64	8.26	7.98	7.14	2.36	0.21	17.69	2.77		8.92	6.76	18.45	0.30	0.02	1331.	19.05
11	1.27	8.19	5.70	6.11	1.34	0.14	13.29	2.33		1.32	6.92	13.57	0.10	0.01	954.	19.01
12	2.54	8.78	13.94	7.66	3.18	0.22	25.00	10.70	0.60	3.40	9.64	24.34	0.60	0.03	1589.	1.27
13	2.93	8.46	16.30	7.35	3.58	0.23	27.46	13.12	0.20	2.54	12.40	28.26	6.10	0.01	1796.	19.00
14	2.17	8.01	8.74	13.38	2.17	0.09	24.38	4.04		9.34	12.36	24.74	0.25	0.01	1745.	18.78
15	2.79	8.37	14.80	11.45	4.50	0.17	30.92	6.28	0.20	7.96	17.44	31.88	0.20	0.01	2183.	19.14
16	1.57	8.53	8.29	4.85	1.85	0.16	15.15	5.64	0.72	2.33	6.96	15.65	0.05	0.02	1015.	0.92
17	1.58	8.30	7.20	7.09	2.07	0.13	16.49	3.43		7.36	6.16	16.95	10.50	0.01	1204.	19.13
18	5.16	8.12	27.84	23.75	10.94	0.81	63.34	12.17		10.78	41.80	64.77	0.15	0.01	4377.	18.90
19	1.36	8.26	5.70	6.80	2.16	0.17	14.83	2.15		7.02	5.80	14.97	0.50	0.02	1083.	18.84
20	2.25	8.60	12.48	9.69	3.48	0.19	25.84	3.90	1.00	10.16	10.50	25.56	0.50	0.05	1823.	19.23
21	0.78	8.80	3.72	3.06	0.97	0.16	7.91	1.40	0.40	3.10	3.20	8.10	33.50	0.30	569.	
22	1.26	8.78	7.15	5.38	1.52	0.12	14.17	1.82	1.20	4.60	6.24	13.86	12.00	0.03	976.	18.85
23	2.10	8.11	7.63	11.87	3.78	0.36	23.64	2.69		6.94	13.96	23.29	1.35	0.02	1644.	19.19
24	3.14	8.11	19.08	7.74	3.50	0.22	30.44	15.07		2.74	13.68	31.49	0.25	0.02	2003.	19.55
25																
26	3.19	8.75	26.28	1.26	3.58	0.22	31.34	14.74	0.40	3.04	13.52	31.70	5.10	0.01	2051.	20.02
27																
28																
29																
30																
31																
32										8.18	5.36	15.88	0.06	0.02	1169.	18.82
33	1.43	8.20	8.74	4.94	1.67	0.23	15.58	2.34	0.80	5.68	5.08	13.71	0.05	0.02	979.	19.34
34	1.27	8.79	6.74	4.97	1.83	0.29	13.83	2.15		4.46	17.50	41.21		0.02	2615.	19.09
35	3.84	8.09	20.21	13.52	5.92	0.31	39.96	19.25								
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Appendix A (Continued).

WEEK# 59 3/31/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.62	8.58						11.78								
2	2.49	8.01						10.43								0.86
3	2.71	8.22						4.56								
4	2.11	7.94						5.46								18.61
5	1.47	8.14						3.03								18.92
6	2.49	7.94						3.16								18.97
7	2.11	8.32						4.00								18.99
8	3.29	8.01						5.80								19.18
9	3.00	8.08						8.20								18.80
10	1.55	8.11						2.66								18.57
11	1.17	8.08						2.23								19.04
12	2.37	8.46						10.68								19.00
13	2.69	8.12						12.94								1.31
14	2.09	7.87						4.10								18.99
15	2.63	7.99						6.14								18.77
16	1.49	8.37						5.54								19.13
17	1.45	8.42						3.39								0.92
18	4.85	7.76						12.35								19.13
19	1.33	8.03						2.13								18.90
20	2.12	7.92						3.77								18.83
21																19.44
22	0.74	8.57						1.34								
23	1.19	8.13						1.82								
24	1.95	7.89						2.68								18.84
25	3.07	8.01						14.88								19.18
26																19.96
27	2.87	8.43						13.66								
28																20.02
29																
30																
31																
32																
33	1.40	8.18						2.35								
35	1.29	8.14						2.19								18.83
51	3.35	8.11						17.00								19.34
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Appendix A (Continued).

WEEK: 60 4/ 7/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.73	8.13						11.82								1.09
2	2.50	8.49						9.36								
3	1.45	8.07						2.52								19.03
4	2.17	8.56						5.35								19.17
5	1.41	8.25						2.43								19.23
6	2.07	8.18						2.43								19.36
7	2.11	8.04						3.67								19.58
8	1.62	8.01						3.07								19.11
9	2.97	8.00						7.55								18.78
10	1.56	8.10						2.56								19.55
11	1.34	8.08						2.14								19.65
12	2.40	8.29						9.92								1.55
13	2.36	8.45						9.75								19.18
14	2.08	8.32						4.02								19.02
15	2.54	8.34						5.77								19.37
16	1.49	8.23						5.14								1.56
17	1.38	8.09						3.11								19.34
18																
19	1.26	8.45						2.15								19.24
20	2.14	8.28						3.51								19.80
21																
22	0.81	8.52						1.36								
23	1.22	8.67						1.83								19.47
24	2.04	7.97						2.58								19.61
25																
26																
27																
28																
29																
30																
31																
32																
33	1.44	8.09						1.97								19.04
35	1.28	8.28						2.09								19.71
51	3.65	8.45						18.33								19.53
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Appendix A (Continued).

WEEK# 61 4/14/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.67	8.30						11.48								1.02
2	2.45	8.35						9.23								
3	1.69	7.90						5.39								18.74
4	2.04	8.14						4.83								19.08
5	1.40	7.88						2.86								19.17
6	2.01	8.12						2.66								19.26
7	2.20	8.09						4.15								19.46
8	2.76	8.02						5.39								19.04
9	3.08	8.34						6.11								18.72
10	1.59	8.04						2.64								19.44
11	1.32	8.05						2.25								19.44
12	2.39	8.06						9.86								1.58
13	2.68	8.34						12.11								19.15
14	2.15	8.07						4.06								18.93
15	2.67	7.98						6.01								19.35
16	1.58	8.20						5.70								1.52
17	1.78	8.13						5.70								19.39
18																
19	1.33	7.87						2.10								19.21
20	2.18	8.02						3.56								19.57
21																
22	0.85	8.34						1.56								
23	1.39	8.00						2.29								19.27
24	1.86	7.90						2.67								19.50
25																
26																
27																
28																
29																
30																
31																
32																
33	1.43	8.20						2.10								18.96
35	1.27	7.82						2.08								19.62
51	3.56	8.07						17.38								19.39
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Appendix A (Continued).

WEEK: 62 4/21/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.61	8.31						10.93								0.86
2	2.52	8.01						9.87								
3	1.79	7.96						2.86								18.69
4	2.19	8.16						5.30								19.03
5	1.52	7.93						2.73								19.08
6	2.09	7.61						4.69								19.16
7	2.22	8.00						3.98								19.34
8	3.15	7.82						5.54								18.95
9	3.09	8.23						8.64								18.64
10	1.64	8.06						2.85								19.29
11	1.29	8.43						2.21								19.25
12	2.59	8.33						11.55								1.53
13	2.06	8.37						11.96								19.12
14	2.11	7.70						3.85								18.87
15	2.72	7.86						5.90								19.26
16	1.65	8.06						6.06								1.62
17	1.70	8.05						4.39								19.29
18	4.12	7.82						9.79								19.12
19	1.29	8.07						1.79								19.35
20	2.13	8.02						3.56								19.42
21																
22	0.88	8.25						1.69								
23	1.33	8.47						2.06								19.07
24	2.03	7.98						2.63								19.38
25																
26																
27																
28																
29																
30																
31																
32																
33	1.46	8.43						1.99								18.91
34	1.20	8.24						1.91								19.47
51	3.69	7.62						17.66								19.27
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Appendix A (Continued).

WEEK# 63 4/28/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.30	8.29	14.95	7.83	3.33	0.23	26.34	10.60	0.80	3.58	11.24	26.22	0.05	0.05	1708.	0.94
2	1.65	8.48	8.93	6.09	2.25	0.32	17.59	5.21	0.64	3.78	7.91	17.54		0.42	1182.	
3	1.41	8.72	7.30	6.64	2.06	0.18	16.18	2.31	2.12	4.36	7.08	15.87	6.10	0.06	1085.	18.99
4	1.51	8.24	8.11	6.80	2.35	0.11	17.37	2.76		7.42	6.45	16.63	5.15		1216.	19.27
5	1.61	8.62	7.38	7.94	1.95	0.35	17.62	3.05	1.20	3.76	9.58	17.59	6.05		1200.	19.11
6	2.28	8.30	10.32	11.82	5.02	0.28	27.44	3.06		7.12	16.03	26.21	0.15		1859.	19.13
7	2.26	8.43	11.23	11.15	3.35	0.20	25.93	4.25	0.60	7.04	14.57	26.40	0.10		1828.	19.36
8	3.34	8.36	20.10	12.03	4.69	0.31	37.13	6.48	0.80	7.54	22.07	36.89	0.20		2540.	18.89
9	3.17	8.55	17.46	12.92	5.51	0.28	36.17	9.79	1.48	4.98	19.99	36.24	0.15		2394.	18.61
10	1.62	8.68	9.01	6.35	2.43	0.16	17.95	3.04	1.80	5.80	7.08	17.72	0.70	0.01	1226.	19.22
11	1.26	8.77	7.46	5.13	1.19	0.09	13.87	2.24	1.12	4.40	5.62	13.38	9.20	0.01	944.	20.02
12	2.55	8.52	15.68	8.07	3.24	0.22	27.21	11.32	0.84	3.52	11.24	26.92	0.20		1751.	1.54
13	2.78	8.30	17.65	7.63	1.74	0.22	27.24	13.21	0.36	2.74	12.07	28.38	5.00	0.01	1814.	19.12
14	2.12	8.49	9.98	11.59	2.17	0.11	23.85	4.31	1.20	5.72	13.53	24.76	0.50		1680.	18.88
15	2.04	8.68	10.10	9.28	3.08	0.31	22.77	4.52	1.68	5.20	11.87	23.27	0.05		1566.	19.38
16	1.67	8.71	9.81	5.35	1.97	0.16	17.29	6.24	1.04	3.16	6.66	17.10			1128.	1.72
17	1.80	8.77	9.56	6.16	1.84	0.14	17.70	3.92	2.12	4.82	6.66	17.52	4.05	0.02	1188.	19.33
18	3.91	8.55	21.40	17.88	7.39	0.89	47.56	10.07	1.96	6.10	29.56	47.69	0.10		3183.	19.13
19	1.31	8.73	5.98	6.13	2.03	0.16	14.30	2.22	2.00	4.88	5.82	14.72	0.10		998.	19.01
20	2.22	8.44	12.88	9.31	3.34	0.16	25.89	3.68	1.72	8.54	11.87	25.81	0.05		1803.	19.39
21																
22	0.93	8.68	4.45	3.70	1.18	0.16	9.49	1.64	1.40	2.42	3.95	9.41	1.50	0.20	635.	
23	1.46	8.36	7.74	6.83	1.96	0.06	16.59	2.41	0.76	6.84	6.04	16.05	14.00	0.01	1157.	19.89
24	4.27	8.57	9.30	14.04	4.16	0.48	27.98	2.80	1.32	5.68	18.32	28.12	6.70		1930.	20.04
25	3.41	8.36	21.70	10.12	4.27	0.24	36.33	16.48	0.40	2.82	16.24	35.94	0.10		2311.	20.26
26																
27	2.71	8.49	18.85	6.09	2.88	0.20	28.02	12.09	0.64	2.70	12.28	27.71	4.00	0.01	1801.	20.28
28																
29																
30																
31																
32																
33	1.49	8.12	9.94	4.40	1.78	0.23	16.35	1.93		8.81	5.62	16.36	0.05		1223.	19.16
35	1.22	8.53	5.88	5.21	1.90	0.21	13.20	2.16	0.92	5.28	4.79	13.15	0.05		927.	19.15
51	3.63	8.39	22.16	12.84	5.80	0.33	41.13	19.31	0.56	3.96	16.45	40.28	0.10	0.01	2583.	19.20
52																
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Appendix A (Continued).

WEEK# 64 5/ 5/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.80	8.64						11.40								0.90
2	2.71	8.27						10.15								
3	1.91	7.87						2.72								18.77
4	1.40	8.10						2.12								19.11
5	1.29	7.94						2.06								19.21
6	2.00	7.93						2.59								19.30
7	1.93	7.94						3.23								19.49
8	1.93	7.95						3.18								19.12
9	3.26	8.14						8.98								18.77
10	1.83	7.99						3.13								19.48
11	1.43	8.16						2.08								19.43
12	2.43	8.53						9.80								1.80
13	2.68	8.23						11.55								19.20
14	2.25	8.40						4.05								18.98
15	2.86	8.17						6.07								19.37
16	1.56	8.28						5.00								1.62
17	1.49	8.09						2.67								19.40
18	4.53	8.02						10.96								19.13
19	1.44	8.39						2.20								19.58
20	2.02	7.91						3.25								19.58
21																
22	0.85	7.98						1.58								
23	1.24	8.47						2.04								19.28
24	2.15	8.18						2.60								20.12
25																
26																
27																
28																
29																
30																
31																
32																
33	1.52	8.11						1.98								18.98
35	1.34	8.16						2.00								19.65
51	3.74	8.48						17.65								19.42
52																
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Appendix A (Continued).

WEEK= 65 5/12/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.72	8.57						10.70								0.98
2	2.64	8.72						9.49								
3	1.97	8.55						2.72								19.05
4	1.43	8.27						2.10								19.10
5	1.07	8.32						1.65								19.16
6	2.25	8.56						2.83								19.23
7	2.33	8.17						3.95								19.46
8	3.08	8.19						5.46								19.01
9	3.27	8.12						8.34								18.71
10	1.79	8.43						3.14								19.35
11	1.29	8.57						1.96								19.33
12	2.33	8.43						9.17								1.82
13	2.83	8.55						12.19								19.18
14	2.19	8.44						3.95								18.65
15	2.89	8.54						5.96								19.34
16	1.53	8.67						4.88								1.60
17	1.34	8.75						2.38								19.37
18	4.91	8.24						10.87								19.12
19	1.58	8.41						2.30								19.10
20	2.32	8.32						3.35								19.50
21																
22	0.81	8.51						1.36								
23	1.50	8.57						2.34								19.13
24	1.77	8.53						2.38								19.45
25																
26																
27																
28																
29																
30																
31																
32																
33	1.30	8.68						2.06								19.00
35	1.34	8.38						2.21								19.62
51	3.84	8.09						18.11								19.33
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Appendix A (Continued).

WEEK# 66 5/19/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.58	8.58						10.11								
2	2.30	8.41						8.19								1.02
3	1.20	7.86						1.69								
4	1.43	7.84						2.07								19.01
5	1.42	8.06						1.96								19.39
6	1.41	7.96						1.73								19.34
7	1.76	7.75						2.87								19.40
8	1.04	7.95						1.62								19.77
9	3.18	7.71						0.19								19.17
10	1.88	8.06						3.18								19.05
11	1.99	7.81						3.81								19.65
12	2.14	8.32						8.03								19.94
13	2.18	8.08						7.96								2.12
14	2.26	7.99						3.87								19.31
15	2.65	8.06						5.59								19.10
16	1.54	8.18						4.96								19.49
17	1.52	8.59						2.84								1.60
18	5.09	8.01						11.37								19.54
19	1.46	8.11						2.10								19.11
20	2.32	8.37						3.38								19.32
21																19.96
22	0.66	7.97						1.03								
23																
24	1.96	7.97						2.40								
25																
26																19.04
27																20.01
28																
29																
30																
31																
32																
33	1.10	8.18														
35	1.37	7.97						1.76								
51	3.71	8.36						4.24								
52								17.62								
53																19.20
54																19.95
55																
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Appendix A (Continued).

WEEK# 67 5/26/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.67	8.34	14.00	9.05	3.51	0.22	26.78	10.31	0.40	4.18	12.70	27.59	0.45	0.01	1797.	0.96
2	2.62	8.40	13.11	9.94	3.50	0.22	26.77	9.21	0.64	4.78	12.49	27.12	0.05	0.01	1789.	
3	1.56	8.20	7.13	6.93	2.11	0.19	16.36	2.12		7.30	6.87	16.29	0.60		1186.	18.80
4	2.38	8.35	13.38	6.94	2.86	0.21	23.39	9.64	0.36	3.06	10.62	23.68	3.40	0.02	1539.	19.24
5	1.80	8.06	7.42	8.95	2.27	0.11	18.75	2.69		8.20	7.91	18.80	6.85	0.02	1357.	19.28
6	1.88	8.08	6.73	9.72	3.34	0.23	20.02	2.31		6.88	11.66	20.85	0.30	0.02	1461.	19.49
7	2.11	8.13	8.82	10.46	3.15	0.21	22.64	3.55		7.85	12.81	24.21	0.05	0.01	1679.	19.60
8	2.76	8.14	15.87	13.49	3.61	0.27	30.24	5.28		7.14	18.74	31.16	0.10	0.01	2213.	19.12
9	3.32	8.07	17.13	14.00	6.30	0.26	37.69	8.56		7.52	22.49	38.57	0.06		2604.	18.77
10	1.83	8.16	8.00	8.18	2.80	0.10	19.08	3.06		8.64	7.70	19.30	0.40		1391.	19.51
11	1.40	8.35	6.89	6.17	1.37	0.11	14.54	2.07	0.92	6.30	5.14	14.43	7.65	0.01	1035.	19.52
12	2.38	8.47	12.42	8.17	3.04	0.21	23.84	9.44	0.36	3.94	9.79	23.53	0.50	0.01	1550.	1.98
13	2.29	7.01	13.05	5.96	2.64	0.20	21.85	8.79		0.40	13.12	22.31	3.02		1426.	19.24
14	2.35	8.15	9.17	14.40	2.72	0.09	26.38	4.13		8.26	14.37	26.76	0.45		1877.	19.02
15	2.90	8.16	14.37	11.93	4.36	0.21	30.87	5.84		8.18	17.49	31.51	0.16	0.01	2177.	19.48
16	1.53	8.41	7.71	4.77	1.69	0.15	14.32	4.80	0.48	3.82	5.53	14.43	0.28		970.	1.62
17	1.16	8.33	5.53	4.42	1.22	0.13	11.30	1.82	0.56	4.68	3.33	10.34	1.60	0.01	762.	19.47
18	4.50	7.95	24.31	20.52	8.90	0.80	54.52	10.01		9.20	33.31	52.52	0.44		3626.	19.12
19	1.55	8.08	5.82	7.69	2.27	0.17	15.95	2.36		8.11	5.73	16.20	0.07		1176.	19.23
20	2.52	8.14	13.11	10.56	3.50	0.17	27.34	3.78		11.30	13.12	28.20	0.08		2016.	19.69
21																
22	0.69	8.41	2.86	2.66	0.83	0.12	6.47	1.16	0.24	2.38	1.98	5.76	1.20	0.11	422.	
23	1.37	8.05	5.75	6.24	1.64	0.07	13.70	1.87		7.60	3.54	13.01	3.80	0.01	980.	19.31
24	1.95	8.09	6.85	10.54	3.33	0.37	21.09	2.49		6.00	13.32	21.81	0.04		1518.	19.10
25	3.15	8.24	19.37	8.71	3.50	0.22	31.80	13.98		3.14	14.16	31.28	0.07		2038.	20.19
26																
27	2.81	8.45	17.23	6.54	2.96	0.22	26.95	11.71	0.32	3.08	12.70	27.81	4.05	0.02	1794.	20.23
28																
29																
30																
31																
32																
33	1.09	8.48	6.89	2.36	0.88	0.19	10.32	1.65	0.56	5.06	3.12	10.39	1.32		758.	19.16
35	1.44	8.22	6.57	6.14	1.89	0.24	14.84	2.40		7.60	4.16	14.16	0.05		1055.	19.80
51	3.97	8.37	19.27	13.92	6.34	0.31	39.84	18.65	0.56	4.20	17.07	40.04	0.07	0.01	2565.	
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Appendix A (Continued).

WEEK# 68 6/ 2/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.58	8.03						9.85								1.00
2	2.44	7.80						8.92								
3	1.92	7.59						2.84								18.83
4	1.48	7.93						2.40								19.22
5	1.33	7.36						1.98								19.23
6	2.50	7.25						2.93								19.28
7	2.29	7.59						3.90								19.51
8	3.13	7.47						5.97								19.03
9	3.42	7.50						9.01								18.72
10	1.85	7.62						3.13								19.36
11	1.74	7.58						2.90								19.30
12	2.19	8.19						8.19								1.98
13	2.80	8.09						12.43								19.17
14	2.30	7.70						4.07								18.97
15																
16	1.59	8.22						5.23								1.68
17	1.32	7.73						2.39								19.47
18	4.85	7.71						11.18								19.11
19	1.55	7.67						2.37								19.09
20	2.38	8.04						3.47								19.58
21																
22	0.56	8.02						0.92								
23	1.35	8.40						1.88								19.11
24	1.95	8.25						2.64								19.50
25																
26																
27																
28																
29																
30																
31																
32																
33	1.00	8.23						1.51								19.16
35	1.44	7.93						2.42								19.45
51	3.81	7.63						17.64								19.39
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Appendix A (Continued).

WEEK# 69 6/ 9/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.39	8.03						9.40								0.98
2	2.32	8.48						8.01								0.50
3	1.75	7.88						2.84								18.65
4	1.84	7.86						3.40								
5	1.16	7.60						1.99								19.28
6	2.60	7.64						3.15								19.29
7	2.15	7.91						4.04								19.50
8																
9																
10	1.70	7.68						3.05								19.26
11																
12	1.97	7.97						7.67								2.00
13	2.57	8.04						11.56								19.20
14																
15																
16	1.31	8.08						4.09								2.05
17	0.93	8.17						1.55								19.54
18	3.83	7.69						8.87								19.23
19	1.46	8.00						2.41								19.00
20	2.31	8.01						3.51								19.56
21																
22	0.51	8.24						0.82								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	0.95	8.38						1.52								19.23
35	1.26	8.74						2.21								19.86
51	3.42	8.15						17.43								19.43
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Appendix A (Continued).

WEEK# 70 6/16/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.58	8.56						10.02								0.96
2	2.47	8.05						8.82								0.58
3	1.80	7.84						2.70								19.26
4	1.96	7.82						3.77								19.49
5	0.86	7.46						1.15								19.48
6	2.20	7.62						2.30								
7	1.30	8.27						2.12								
8	1.04	7.41						1.70								19.32
9	2.76	7.62						7.06								18.64
10	2.12	7.88						4.09								19.51
11	1.18	8.27						1.78								18.97
12	1.97	8.08						7.19								1.94
13	2.43	8.40						10.10								19.30
14	2.22	8.13						4.18								19.25
15	2.63	8.14						5.62								19.54
16	1.29	8.15						3.53								2.25
17	1.02	8.11						1.75								19.56
18	4.43	7.70						9.90								19.61
19	1.49	8.16						2.38								19.23
20	2.00	8.31						3.25								19.62
21																
22	0.60	7.92						1.02								
23																
24	2.07	8.30						2.60								19.54
25																
26																
27																
28																
29																
30																
31																
32																
33	1.03	8.34						1.77								19.52
35	1.26	7.75						2.31								19.86
51	3.57	8.24						16.86								19.57
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Appendix A (Continued).

WEEK# 71 6/23/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	IDS	WATER ELEVATION
1	2.50	8.29	15.75	8.64	3.61	0.26	28.26	9.99		5.14	12.28	27.41	0.20	0.04	1847.	1.00
2										10.82	19.31	34.40	0.08	0.14	2456.	18.94
3	2.78	7.95	14.65	15.31	5.16	0.28	35.40	4.27								
4										7.48	4.33	13.59	0.70	0.18	1027.	19.35
5	1.20	8.18	6.20	6.38	1.62	0.24	14.44	1.78		6.90	16.97	26.45	0.07	0.02	1830.	19.34
6	2.10	7.97	8.18	12.12	4.86	0.32	25.48	2.58		7.68	11.14	22.26	0.10	0.08	1560.	19.62
7	1.60	7.98	8.61	9.40	3.16	0.24	21.41	3.44		7.74	20.82	34.77	0.07	0.01	2443.	19.13
8	2.92	7.82	19.48	11.78	4.50	0.31	36.07	6.21		6.54	21.76	38.04	0.08	0.01	2593.	18.76
9	3.21	8.28	18.64	14.33	6.33	0.32	39.62	9.42	0.32	7.20	9.79	21.65	1.40	0.02	1503.	19.52
10	1.93	8.39	9.10	9.10	3.19	0.10	21.49	3.54	1.12	6.12	3.83	11.36	1.95	0.02	847.	19.56
11	1.03	8.18	5.58	4.66	1.12	0.10	11.46	1.41		5.80	10.88	25.61	0.25	0.02	1702.	1.98
12	2.24	8.26	12.96	8.15	3.17	0.23	24.51	8.93		5.66	10.20	22.06	0.55	0.02	1506.	19.28
13	1.98	7.97	11.85	6.90	2.64	0.22	21.61	6.20		9.76	16.34	30.89	1.35	0.01	2205.	19.07
14	2.51	8.22	12.19	10.52	3.25	0.11	32.07	4.79								19.56
15										4.34	4.83	12.56	0.50	0.01	890.	4.64
16	1.25	8.10	6.87	4.43	1.62	0.16	13.08	3.39		5.46	5.25	12.91	1.90	0.09	929.	19.68
17	1.18	8.19	6.04	5.10	1.51	0.15	12.80	2.20		9.02	29.77	46.78	1.55	0.03	3239.	19.40
18	3.61	7.87	20.08	19.57	7.80	0.09	48.14	7.99		8.06	8.64	20.27	0.15	0.01	1478.	19.38
19	1.62	8.21	8.70	9.33	3.06	0.14	21.23	2.97		10.10	13.12	27.28	1.65	0.01	1944.	19.73
20	2.23	8.39	13.59	9.78	3.47	0.16	27.00	3.50	0.56							
21										2.44	1.25	5.10	1.40	0.20	366.	
22	0.52	8.13	2.10	2.31	0.69	0.11	5.21	1.41		5.86	7.29	16.07	9.80	0.02	1133.	19.30
23	1.38	8.27	6.79	7.09	1.90	0.08	15.86	2.40	0.52	6.74	17.30	26.72	5.50		1881.	19.69
24	2.29	8.04	8.57	13.51	4.61	0.51	27.20	2.68		3.20	13.43	29.41	1.00		1941.	20.55
25	2.42	8.00	18.95	8.05	3.47	0.22	30.69	12.78		6.02	44.97	60.29	0.40	0.01	4214.	19.45
26	5.32	8.32	48.86	7.68	5.48	0.40	62.42	8.82	0.48	3.18	13.32	29.50	5.00	0.02	1943.	20.25
27	2.96	8.14	18.85	8.01	3.77	0.22	30.91	13.00		1.40	13.12	25.17	2.80	0.15	1656.	19.99
28	2.55	8.03	18.43	5.09	2.35	0.23	26.10	10.65		4.14	14.99	28.28	4.15		1922.	19.58
29	2.67	8.21	15.86	10.43	2.84	0.43	29.46	9.15								18.74
30																
31																
32										7.92	4.75	12.40	2.20	0.02	1057.	
33	1.17	8.34	5.58	4.73	1.91	0.21	12.43	1.69	1.04	6.40	6.87	15.48	0.19	0.01	1117.	19.87
35	1.41	8.01	6.59	6.71	1.95	0.23	15.48	2.21								
51										4.92	9.58	29.91	0.05	0.10	1715.	
52	1.83	8.15	10.05	7.09	2.54	0.30	19.98	15.21								
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Appendix A (Continued).

WEEK# 72 6/30/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.41	8.33						9.47								0.89
2	2.12	8.22						7.81								0.58
3	1.10	7.89						1.54								19.16
4	2.14	8.15						4.81								19.35
5	0.70	7.57						0.87								19.48
6	2.34	7.84						2.38								19.23
7	2.11	7.98						4.07								19.59
8	1.42	7.70						2.45								19.23
9	2.90	7.84						7.96								18.90
10	0.64	7.90						0.93								19.62
11	1.07	8.10						1.75								19.41
12	1.88	8.24						0.61								1.94
13	1.68	8.02						4.70								19.26
14	2.26	8.17						4.22								19.27
15	2.64	8.06						5.78								19.51
16																
17																
18																
19	1.63	7.72						2.97								19.31
20	2.31	8.11						3.57								19.37
21																
22	0.51	7.87						0.75								
23	1.10	7.99						1.71								19.15
24	2.26	8.00						2.49								19.63
25																
26																
27																
28																
29																
30																
31																
32																
33	0.77	8.06						1.08								19.25
35	1.34	7.92						2.00								19.80
51	3.41	7.73						10.06								19.69
52																
53																
54																
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Appendix A (Continued).

WEEK# 73 7/ 7/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.48	8.50						9.69								0.94
2	2.41	8.32						8.70								0.48
3	2.48	8.58						3.61								18.86
4	0.84	8.49						1.24								19.04
5	0.71	8.05						0.95								19.30
6	2.56	8.46						2.39								19.44
7	1.79	8.44						3.00								19.69
8	2.46	8.51						4.66								19.21
9	3.01	8.62						7.54								18.82
10	1.18	8.50						1.97								19.64
11																
12	2.38	8.61						8.42								2.08
13	1.75	8.48						4.64								19.40
14	2.10	8.32						4.11								19.05
15	2.50	8.40						5.77								19.54
16	1.18	8.18						3.39								3.06
17	1.18	8.12						2.93								19.78
18	3.35	8.07						8.45								19.55
19	1.45	8.62						2.71								19.57
20	2.22	8.50						3.50								20.06
21																
22	0.54	8.43						0.84								
23	0.63	8.47						1.13								19.54
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	0.61	8.23						0.93								19.21
35	1.28	8.78						2.07								19.96
51	3.41	8.53						17.77								
52																
53																
54																
55																
56																
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Appendix A (Continued).

WEEK# 74 7/14/76

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.62	8.38						10.73								0.80
2	2.45	8.30						9.13								0.40
3	2.60	8.08						3.84								18.81
4	1.54	8.07						2.42								18.93
5	0.81	8.04						1.13								19.37
6	2.82	7.89						3.33								19.43
7	2.03	7.94						3.84								19.65
8	2.89	7.62						5.62								18.81
9	3.33	7.88						8.80								18.78
10	1.73	7.99						3.44								19.60
11	1.26	8.02						1.82								19.64
12	2.25	8.09						8.60								1.88
13	1.50	8.39						3.10								19.30
14	2.29	8.22						4.86								19.05
15	2.71	8.21						5.92								19.57
16	1.44	8.46						4.28								3.03
17																
18	4.13	7.87						8.66								19.52
19	1.62	7.92						2.88								19.32
20	2.34	8.18						3.65								19.73
21																
22																
23	1.04	7.87						1.76								19.43
24	7.81	7.88						1.58								19.71
25																
26																
27																
28																
29																
30																
31																
32																
33	9.39	5.52						1.25								19.15
35	9.50	1.17						2.10								19.19
51	3.56	8.05						18.65								19.55
52																
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59																
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Appendix A (Continued).

WEEK# 75 7/21/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.75	8.66	16.25	9.71	4.15	0.27	30.38	10.74	0.36	4.86	13.74	29.70	0.24	0.02	1977.	1.14
2	2.60	8.60	14.26	9.77	3.68	0.26	27.97	9.34	0.46	5.34	13.01	28.15	0.10	0.02	1874.	0.40
3	3.49	8.56	18.61	18.77	6.44	0.35	44.17	6.16	0.32	10.76	27.17	44.41	2.35	0.08	3085.	18.83
4	1.68	8.46	9.84	7.90	2.83	0.16	20.73	2.62	0.52	9.62	7.34	20.10	0.70	0.01	1473.	19.22
5	1.03	8.35	4.69	4.65	1.35	0.27	10.96	1.73		5.04	4.29	11.06	0.10	0.34	803.	19.40
6	2.99	8.11	10.82	20.13	7.48	0.44	38.87	2.91		8.16	28.58	39.65	1.30	0.01	2734.	19.62
7	1.91	8.32	8.32	10.00	3.31	0.24	21.87	3.87		6.40	12.23	22.70	0.12	0.01	1556.	19.79
8	2.92	8.45	17.77	11.93	4.28	0.41	34.39	5.94	0.48	7.48	20.09	33.99	0.10	0.08	2362.	19.49
9	3.53	8.45	19.98	15.91	6.41	0.31	42.61	10.58	0.28	7.84	22.38	41.08	0.05	0.01	2805.	18.77
10	2.51	8.39	13.43	12.06	4.53	0.13	30.15	4.57	0.24	11.72	13.74	30.27	0.12	0.01	2155.	19.59
11	1.03	8.49	5.72	4.29	0.93	0.11	11.05	1.30	0.44	5.76	3.58	11.08	8.95	0.01	816.	
12	2.55	8.56	14.76	9.50	3.57	0.27	28.10	9.30	0.60	4.72	12.23	26.85	0.10	0.01	1807.	1.44
13	1.71	8.49	10.21	5.23	2.37	0.19	18.00	3.24	0.36	5.94	8.95	18.49	2.05	0.01	1294.	19.33
14	2.43	8.42	11.47	14.70	3.42	0.12	29.71	4.47	0.28	8.88	16.08	29.71	1.85	0.01	2086.	19.04
15	3.27	8.19	18.10	15.58	5.92	0.19	39.79	6.81		9.96	23.37	40.14	0.70	0.01	2779.	19.54
16	1.58	8.55	8.84	5.42	2.05	0.17	16.48	5.45	0.56	4.20	5.50	15.71	0.05	0.01	1074.	3.20
17	1.27	8.48	6.00	5.69	1.65	0.15	14.09	2.00	0.38	6.37	5.00	13.75	1.70	0.01	1003.	
18																19.61
19	2.16	8.33	11.91	8.70	3.81	0.09	24.51	3.77	0.28	9.26	11.92	25.23	0.25	0.01	1778.	19.19
20	1.83	8.41	9.87	7.40	2.60	0.38	20.25	2.83	0.28	8.24	9.84	21.19	0.06	0.01	1506.	20.12
21																
22	0.94	8.55	4.58	4.01	1.29	0.17	10.05	1.47	0.32	3.82	4.52	10.13	1.50	0.21	720.	
23	1.20	8.30	5.72	5.93	1.61	0.13	13.39	1.56	0.18	7.02	5.20	13.96	4.90	0.03	1014.	
24	1.96	8.25	6.79	12.23	3.69	0.56	23.27	2.23		6.78	15.20	24.21	1.85		1691.	
25	2.95	8.25	17.94	8.10	3.58	0.25	29.67	12.28		3.24	14.42	29.94	1.15		1954.	20.41
26	5.90	8.45	54.03	7.65	6.11	0.48	68.27	9.96	0.04	7.00	51.84	69.44	0.50	0.01	4778.	19.38
27	3.07	8.22	20.32	8.10	3.80	0.26	32.48	13.54		3.30	18.68	31.57	4.35	0.01	2072.	20.46
28	2.75	8.26	17.94	6.56	3.41	0.23	28.14	10.90		2.78	14.31	27.99	2.35	0.01	1838.	20.14
29	2.64	8.45	16.42	8.77	3.16	0.46	28.81	9.23	0.28	3.62	15.09	28.22	4.90	0.01	1891.	19.77
30	2.87	8.23	16.59	12.47	4.78	0.32	34.16	2.89		6.46	27.22	36.57	0.10	0.01	2506.	18.62
31	6.20	8.41	43.21	11.51	7.81	0.73	63.26	38.75	0.28	11.62	11.24	61.89	0.15	0.01	3978.	
32																18.37
33	0.64	8.44	3.28	2.11	0.91	0.16	6.46	0.93	0.24	3.02	2.21	6.40	1.40	0.01	466.	19.11
35	1.49	8.31	6.71	7.25	2.18	0.24	16.38	2.34		7.72	6.51	16.57	0.08		1202.	19.91
51	3.56	8.27	21.52	12.74	5.26	0.41	40.93	18.90		3.30	16.34	38.54	0.10		2486.	19.91
52	3.56	8.45	26.97	7.30	3.84	0.41	38.52	15.41		3.92	18.32	37.65	0.09	0.02	2494.	
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Appendix A (Continued).

WEEK# 76 7/28/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.67	8.68						9.95								0.78
2	2.58	8.04						8.96								0.31
3	3.52	8.07						5.70								18.75
4	1.74	7.85						2.70								19.15
5	0.95	8.08						1.59								19.25
6	2.87	7.82						3.22								19.37
7	2.01	8.44						3.69								19.57
8	3.04	7.94						6.26								19.14
9	3.59	8.02						9.52								18.76
10	1.96	8.42						3.63								19.60
11	1.13	8.56						1.27								19.65
12	2.48	8.29						9.55								1.34
13	1.64	8.17						2.96								19.28
14	2.34	8.31						4.58								18.99
15	3.06	8.31						6.93								19.43
16	9.83	8.40						5.36								3.22
17	1.08	8.12						1.75								19.66
18	2.43	8.16						4.59								19.57
19	1.76	8.17						3.18								19.34
20	2.26	8.24						3.51								19.70
21																
22	0.79	8.38						1.22								
23	1.25	8.54						1.73								19.30
24	2.33	8.15						2.47								19.71
25																
26																
27																
28																
29																
30																
31																
32																
33	0.67	8.48						1.02								18.99
35	1.51	8.12						2.61								19.69
51	3.46	8.20						17.41								19.51
52	3.48	8.38						14.64								
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Appendix A (Continued).

WEEK# 77 8/ 4/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.62	8.74						10.34								0.80
2	1.72	8.56						4.85								0.78
3	2.86	8.30						4.62								18.73
4																
5	1.04	8.35						1.78								19.56
6	2.62	8.18						2.71								19.66
7	2.11	8.28						3.99								19.57
8	1.82	8.45						3.21								19.36
9	3.76	8.26						9.86								18.43
10	2.42	8.34						4.05								19.68
11	1.11	8.59						1.41								19.45
12	2.53	7.89						9.47								1.30
13	1.53	8.70						2.57								19.06
14	2.62	8.40						5.13								19.27
15	3.03	8.35						6.55								19.63
16	1.57	8.76						4.86								3.18
17																
18	1.08	8.62						1.80								19.69
19	1.84	8.52						3.43								19.37
20	2.23	8.68						3.44								19.79
21																
22	0.91	8.70						1.45								
23	1.20	8.75						1.63								19.24
24	2.62	8.11						2.70								19.65
25																
26																
27																
28																
29																
30																
31																
32																
33	0.71	8.67						1.09								19.40
35	2.98	8.16						2.27								19.89
51	3.34	8.23						17.68								19.71
52	3.39	8.56						14.92								19.71
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Appendix A (Continued).

WEEK# 78 8/11/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.50	7.91						9.65								1.12
2	2.46	8.08						9.20								3.60
3	2.62	7.91						4.03								18.60
4																19.17
5	1.06	8.56						1.83								19.28
6	2.66	7.92						2.93								19.47
7	1.97	8.00						3.44								19.64
8	2.09	7.98						3.92								19.23
9	3.39	7.87						7.84								18.85
10	2.04	8.34						3.89								19.93
11	1.20	8.28						1.91								20.33
12	2.47	8.40						9.20								1.59
13	1.40	8.23						2.24								19.37
14	2.50	8.27						4.95								19.01
15	3.33	8.41						7.37								19.46
16	1.90	8.56						6.06								3.74
17	1.04	8.17						1.43								19.45
18	1.17	8.03						1.86								19.32
19	1.68	8.09						2.83								19.63
20	2.20	8.33						3.40								19.88
21																
22	0.82	8.55						1.18								20.10
23	1.21	8.10						1.92								19.92
24	2.90	8.13						2.90								
25																
26																
27																
28																
29																
30																
31																19.02
32								1.14								19.70
33	0.76	8.44						4.59								19.69
35	2.08	8.58						7.86								
51	2.58	7.70						15.20								
52	3.40	8.57														
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Appendix A (Continued).

WEEK# 79 8/18/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.54	8.27						10.01								
2	2.43	8.34						9.22								
3	2.51	8.19						3.86								0.84
4	1.06	8.63						1.44								
5	1.03	8.20						1.36								18.69
6	2.89	7.84						2.63								19.07
7	1.89	8.05						2.80								19.17
8	2.50	8.19						4.39								19.26
9	1.68	8.13						9.45								19.19
10	2.01	8.47						3.39								19.05
11	1.19	8.25						1.83								18.71
12	2.49	8.38						9.43								19.42
13	1.54	8.17						1.44								19.41
14	2.96	8.21						4.76								1.22
15																19.18
16	1.65	8.26														18.93
17	0.98	8.02						3.91								
18								1.20								2.18
19	1.73	8.22														19.41
20								2.43								
21																19.18
22	0.41	8.10														
23	1.16	8.23						1.03								
24	2.78	8.05						1.59								
25								2.52								
26																19.26
27																19.49
28																
29																
30																
31																
32																
33	0.93	8.55														
34								1.08								
51																
52																
53																18.90
54																19.39
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Appendix A (Continued).

WEEK# NO 8/25/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.5	8.09	16.62	9.44	3.81	0.26	30.13	13.22		5.18	12.91	31.31	0.30	0.02	2032.	0.83
2	2.47	8.10	14.33	9.91	3.64	0.25	28.14	9.27		5.76	12.28	27.31	0.20	0.03	1852.	0.34
3	3.89	7.83	22.51	19.87	7.24	0.39	50.01	7.62		12.34	29.98	49.94	0.05	0.04	3482.	18.80
4	1.26	8.01	7.24	5.95	1.92	0.16	15.27	2.00		7.38	5.20	14.58	2.80	0.02	1086.	19.19
5	1.08	8.04	5.65	5.25	1.52	0.26	12.68	1.98		5.64	4.54	12.16	3.40	0.23	896.	19.33
6	2.60	8.00	11.12	15.44	6.01	0.37	33.34	2.89		7.82	22.06	32.77	0.05	0.06	2300.	19.37
7	2.25	7.86	10.27	12.91	4.16	0.27	27.61	4.19		7.64	15.41	27.24	1.40	0.07	1911.	19.58
8	2.44	8.20	15.64	10.68	3.72	0.38	30.42	4.53		8.26	16.86	29.65	0.10	0.06	2108.	18.72
9	3.57	7.66	21.97	16.31	6.66	0.36	45.30	9.27		8.52	27.24	45.07	0.03	0.01	3086.	18.81
10	2.44	7.64	15.89	10.85	4.17	0.11	31.02	3.95		13.58	12.70	30.23	3.80	0.04	2216.	19.48
11	1.27	7.94	6.40	8.55	1.54	0.13	14.42	4.11		6.84	4.58	13.53	2.35	0.03	1014.	19.36
12	2.25	8.14	14.33	8.39	3.23	0.24	26.19	8.35		5.56	11.03	24.94	0.95	0.01	1711.	1.26
13	1.74	7.89	12.06	5.85	2.32	0.21	20.44	3.74		7.34	8.54	19.62		0.02	1421.	19.20
14	3.15	8.09	17.99	19.00	3.86	0.01	40.66	9.54		13.00	20.61	40.15	2.25	0.01	2857.	19.06
15	3.10	8.38	18.19	15.98	5.57	0.26	40.00	7.06		9.87	23.53	40.41		0.03	2796.	19.49
16	1.64	8.19	8.42	5.92	2.17	0.18	16.69	5.06		5.36	5.62	16.04	0.50	0.01	1122.	2.32
17	1.18	7.92	6.61	5.72	1.69	0.18	14.20	1.85		6.86	4.83	13.54	0.72	0.03	1010.	19.48
18																
19	1.69	8.08	8.69	9.20	2.74	0.17	20.80	2.98		9.30	8.74	21.02	0.05	0.02	1517.	19.25
20	2.17	8.01	14.44	9.40	3.05	0.20	27.09	3.48		10.91	12.07	26.46	0.25	0.01	1934.	19.52
21																
22	0.84	8.41	4.34	3.86	1.20	0.18	9.58	1.35		4.20	3.77	9.32	1.30	0.21	684.	
23	1.25	7.90	6.09	6.22	1.64	0.11	14.06	1.63		7.90	4.33	13.86	8.90	0.06	1037.	19.16
24	3.38	7.76	14.41	24.19	6.51	0.82	45.93	3.36		10.06	31.22	44.64	2.75	0.05	3160.	19.52
25	2.85	8.05	19.69	7.45	3.31	0.25	30.70	12.31		3.16	13.84	29.31	1.55	0.01	1946.	20.32
26																19.36
27	3.06	8.24	20.94	7.58	3.49	0.28	32.29	13.91		3.40	14.57	31.88	4.35	0.03	2087.	20.15
28	2.38	8.23	15.44	5.62	2.73	0.21	24.00	9.52		4.36	12.18	24.06	3.55	0.01	1575.	19.84
29	2.49	8.10	15.34	6.51	3.32	0.42	27.59	8.98		3.86	14.16	27.00	4.85	0.01	1814.	19.41
30	2.47	7.68	14.98	11.50	4.01	0.29	30.78	2.53		6.34	21.44	30.31	0.10	0.01	2141.	18.55
31																
32																18.32
33	1.38	8.33	5.80	7.42	3.03	0.27	16.52	2.64	0.20	5.74	7.41	15.99		0.02	1135.	19.03
34	1.98	8.14	9.16	10.99	3.19	0.32	23.68	4.08		9.16	10.33	23.57		0.01	1682.	19.62
35	2.44	7.50	12.33	11.94	6.01	0.31	30.59	4.64		8.84	16.55	30.03	0.10	0.04	2107.	
36	3.34	8.14	25.15	6.92	3.59	0.39	36.05	14.98		3.78	16.45	35.21	0.20	0.04	2327.	
37																
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Appendix A (Continued).

WEEK# 81 9/ 1/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.69	8.62						11.08								0.76
2	2.61	8.27						10.16								0.20
3	3.42	7.89						5.89								18.68
4	1.24	7.91						1.72								19.06
5	1.08	7.58						1.68								19.18
6	1.93	7.80						3.19								19.23
7	2.05	8.17						3.70								19.11
8	2.97	8.05						5.86								19.04
9	4.11	8.04						5.86								18.69
10	2.50	8.27						4.44								19.46
11																
12	2.45	8.63						9.87								1.64
13	1.94	8.61						5.65								19.30
14	2.69	8.24						5.35								18.91
15	3.42	8.28						6.77								19.14
16	1.89	8.24						9.01								2.14
17	1.21	7.97						1.94								19.37
18																
19	1.85	7.96						3.36								19.32
20	2.30	8.11						7.16								19.80
21																
22	0.96	8.57						1.63								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.19	8.63						1.88								19.20
34	2.01	8.09						3.93								19.51
51																19.48
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Appendix A (Continued).

WEEK: 82 9/ 8/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.81	8.35														0.74
2	2.60	8.41														0.18
3	3.38	8.09						11.55								18.68
4	1.40	8.17						10.38								19.03
5	1.07	7.33						5.70								19.13
6	1.00	7.82						2.02								19.24
7	2.23	8.07						1.79								19.41
8	2.97	8.42						3.90								18.72
9	4.52	7.79						4.09								18.70
10	2.41	8.05						5.88								19.44
11	1.25	8.20						11.83								19.47
12	2.41	8.39						3.54								1.28
13	2.18	8.47						2.13								19.18
14	2.56	8.20						9.29								18.88
15	3.06	8.36						7.27								19.01
16	3.20	8.12						4.83								5.22
17	1.24	7.81						6.51								19.35
18								8.49								
19	2.13	7.95						2.04								19.20
20	2.35	8.03														19.54
21								4.12								
22								3.57								
23	1.18	8.45														19.33
24	3.53	8.03														19.50
25								1.99								
26								3.24								
27																
28																
29																
30																18.95
31																19.49
32								1.93								
33	1.37	8.49						4.49								
34	2.18	8.37														
35																
36																
37																
38																
39																
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Appendix A (Continued).

WEEK# 83 9/15/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.43	8.47						9.75								0.90
2	2.41	8.52						9.10								0.42
3	2.00	8.21						3.17								18.87
4	1.22	7.85						1.90								18.70
5	0.98	7.76						1.70								19.37
6	2.42	7.84						4.61								19.44
7	1.75	7.92						3.11								19.64
8	1.63	7.85						2.87								19.21
9	3.35	7.77						6.24								19.07
10	1.64	7.88						2.30								19.71
11	1.21	7.95						1.81								20.05
12	2.50	7.98						10.63								1.66
13	2.22	7.92						4.01								19.31
14	2.43	7.87						4.53								19.10
15	2.84	8.03						5.88								19.48
16	1.68	8.14						5.46								2.46
17	1.35	7.72						2.26								19.53
18																
19	1.33	7.70						2.30								19.44
20	1.71	7.83						2.78								20.30
21																
22	1.00	8.29						1.65								
23	1.22	8.00						2.07								19.77
24	1.98	7.87						2.45								19.94
25																
26																
27																
28																
29																
30																
31																
32																
33	1.10	8.02						1.93								19.64
35	1.82	7.93						3.59								19.69
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Appendix A (Continued).

WEEK# 84 9/22/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.48	8.29						10.38								0.76
2	2.30	8.17						9.30								0.22
3	2.35	8.21						3.89								18.64
4	1.14	7.98						1.83								19.14
5	0.99	7.70						1.72								19.17
6	2.20	7.87						2.68								19.26
7	1.71	7.85						3.05								19.44
8	2.41	7.87						4.69								18.76
9	3.76	8.10						9.42								18.75
10	1.67	8.12						2.24								19.46
11	1.15	7.97						1.70								19.48
12	2.32	8.28						8.99								1.32
13	2.19	7.98						8.45								19.22
14	2.39	8.01						4.59								18.57
15	2.75	8.37						5.87								19.35
16	1.63	8.38						5.36								2.54
17	1.20	7.90						1.92								19.69
18																
19	1.54	7.87						2.65								19.23
20	1.78	8.14						2.73								19.54
21																
22	0.94	8.46						1.64								
23	1.24	7.97						2.05								19.30
24	2.37	7.98						2.60								19.55
25																
26																
27																
28																
29																
30																
31																
32																
33	1.06	8.33						1.72								18.85
35	1.89	8.41						3.93								19.50
51	2.57	7.68						8.63								19.38
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Appendix A (Continued).

WEEK# 85 9/29/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.75	8.18	17.08	8.73	3.76	0.26	29.83	10.49		5.38	13.12	28.99	0.55	0.03	1954.	0.78
2	2.62	8.32	14.79	9.18	3.67	0.29	27.93	9.24		5.94	12.91	28.09	0.05	0.01	1890.	0.18
3	2.65	7.88	16.45	11.20	3.92	0.28	31.35	4.08		9.78	16.66	30.52	0.10	0.02	2203.	18.60
4	1.60	7.91	8.10	7.21	2.46	0.13	17.90	2.24		8.76	7.39	18.39	0.90	0.01	1335.	18.97
5	1.05	8.12	5.50	4.45	1.36	0.25	11.56	1.60		4.88	4.54	11.02		0.23	814.	19.08
6	2.84	7.94	15.22	14.50	6.89	0.39	37.00	3.73		8.45	23.32	35.50		0.08	2507.	19.19
7	2.09	8.06	9.94	9.97	2.77	0.22	22.90	3.50		7.58	12.28	23.36	0.05	0.08	1647.	19.37
8	3.41	8.08	18.62	15.00	5.74	0.36	39.72	6.40		10.12	24.98	41.50		0.09	2857.	18.99
9	4.25	7.93	23.75	17.30	7.72	0.40	49.17	10.04		9.48	30.61	50.13		0.01	3407.	18.71
10	2.18	8.21	12.59	8.82	2.91	0.20	24.52	2.83		12.14	10.20	25.17	0.10	0.07	1840.	19.37
11	1.32	8.34	5.35	7.25	1.76	0.11	14.47	1.88		7.64	5.37	14.89	1.20	0.03	1085.	19.41
12	2.67	8.44	14.22	9.55	3.72	0.26	27.75	9.93	0.38	5.03	13.32	28.66	0.10	0.02	1884.	1.36
13	2.14	8.14	11.81	7.17	2.43	0.22	21.63	4.34		6.26	10.20	20.80		0.02	1479.	19.21
14	2.54	8.22	12.43	13.44	3.24	0.09	29.20	4.46		10.84	14.37	29.67	1.85	0.01	2108.	18.91
15	3.12	8.36	15.85	14.58	5.25	0.18	35.86	6.34	0.40	9.40	21.24	37.38	0.80	0.03	2558.	19.28
16	1.83	8.48	9.85	6.26	2.33	0.19	18.63	5.79	0.76	4.98	7.91	19.44		0.01	1299.	2.60
17	1.40	7.92	6.50	6.38	1.86	0.17	14.91	2.11		7.46	5.83	15.40	0.40	0.02	1117.	19.45
18																
19	1.89	8.05	7.82	10.14	3.18	0.13	21.27	3.27		9.40	9.37	22.04	0.05	0.01	1566.	19.13
20																19.47
21																
22	0.85	8.57	3.62	3.64	1.17	0.18	8.61	1.34	0.48	3.50	3.54	8.86	1.65	0.19	623.	
23	1.31	8.16	5.16	7.00	1.82	0.07	14.05	2.11		6.54	5.33	13.98	6.60	0.03	1014.	19.28
24	3.30	8.07	13.46	21.75	5.47	0.73	41.41	3.29		10.39	27.69	41.37	1.30	0.01	2921.	19.48
25	2.92	8.27	18.02	7.24	3.28	0.31	28.85	12.78		3.12	13.74	29.64	1.15	0.01	1915.	20.27
26																19.33
27	3.43	7.97	22.09	7.82	3.75	0.30	33.96	15.66		3.70	14.99	34.35	2.30	0.01	2223.	20.15
28																19.82
29	2.68	8.15	15.46	8.23	3.34	0.42	27.45	9.38		4.00	14.37	27.75	4.30	0.01	1844.	19.41
30	2.35	7.77	11.96	10.71	3.98	0.25	26.90	2.94		6.84	18.11	27.89		0.01	1939.	18.51
31																
32																18.80
33	1.26	8.38	6.46	4.57	1.79	0.23	13.05	2.13	0.32	5.22	5.83	13.50		0.03	954.	18.73
35	2.56	8.03	11.87	12.44	3.58	0.35	28.24	5.98		9.58	11.91	27.47		0.01	1948.	19.48
51	2.98	7.49	14.30	13.59	6.60	0.32	34.81	9.62		7.20	16.66	33.48	0.10	0.01	2274.	19.32
52	3.65	8.07	28.32	6.91	3.74	0.39	39.36	15.90		4.14	18.84	38.88	0.10	0.04	2571.	
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Appendix A (Continued).

WEEK# 86 10/ 6/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.68	8.30						11.91								0.78
2	2.45	8.33						10.53								0.14
3	5.14	8.01						4.12								18.59
4	1.52	8.16						2.37								18.96
5	0.99	7.89						1.70								19.03
6	2.97	8.41						4.26								19.15
7	2.37	8.45						4.63								19.34
8	3.21	8.27						6.46								18.95
9	4.47	8.34						11.48								18.65
10	2.14	8.25						2.76								19.29
11	1.22	8.73						2.01								19.30
12	2.54	8.60						9.96								1.42
13	1.80	7.94						4.40								19.27
14	2.63	8.12						5.24								18.84
15	2.67	8.07						6.34								19.23
16	1.31	8.11						5.85								2.74
17	1.28	8.24						2.11								19.47
18																
19	1.78	8.47						3.34								19.03
20	2.17	8.28						3.59								19.45
21																
22	0.84	8.67						1.31								
23	1.22	8.14						2.02								19.08
24	3.09	8.17						3.20								19.49
25																
26																
27																
28																
29																
30																
31																
32																
33	1.14	8.68						1.88								18.84
35	2.19	8.46						5.58								19.47
51	2.82	8.02						10.37								19.28
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Appendix A (Continued).

WEEK# 87 10/13/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.71	8.44						11.12								0.77
2	2.54	8.54						9.92								0.12
3	2.61	7.80						4.28								18.59
4	1.65	8.15						2.57								18.95
5	1.04	8.06						1.72								19.05
6	3.04	7.91						4.28								19.13
7	2.55	8.12						4.98								19.33
8	3.26	7.95						6.34								18.91
9	4.14	8.05						10.13								18.62
10	1.90	8.02						2.29								19.24
11	1.06	8.15						1.68								19.23
12	2.48	8.52						9.44								1.42
13	1.84	8.06						4.98								19.20
14	2.69	8.37						5.27								18.83
15	2.87	8.40						6.30								19.25
16	1.84	8.56						5.94								2.68
17	1.29	7.88						2.01								19.49
18																
19	1.70	7.96						2.77								18.95
20	2.26	8.14						3.63								19.42
21																
22	0.99	8.53						1.69								
23	1.26	7.98						1.92								19.01
24	2.92	8.11						2.79								19.44
25																
26																
27																
28																
29																
30																
31																
32																
33	1.19	8.49						1.92								18.77
35	4.04	7.88						4.42								19.51
51	3.25	8.32						12.96								19.24
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Appendix A (Continued).

WEEK# 88 10/20/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.74	8.36						11.48								0.78
2	2.02	8.48						7.88								0.12
3	2.72	7.76						4.46								18.58
4	1.35	8.03						1.99								18.93
5	1.08	7.95						1.65								18.98
6	3.04	7.90						4.23								19.09
7	2.53	7.87						4.73								19.30
8	3.27	8.01						6.37								18.88
9	3.86	7.90						9.35								18.60
10	1.95	7.85						2.47								19.19
11	1.13	8.13						1.88								19.19
12	2.35	8.32						8.59								1.38
13	1.69	8.01						3.08								19.18
14	2.61	8.08						4.97								18.81
15	2.78	8.08						6.25								19.22
16	1.81	8.45						5.61								2.66
17	1.39	7.89						2.37								19.44
18																
19	1.73	7.99						2.82								18.93
20	2.27	8.37						3.64								19.38
21																
22	1.03	8.64						1.90								
23	1.18	8.15						1.83								18.96
24	2.66	8.54						2.41								19.40
25																
26																
27																
28																
29																
30																
31																
32																
33	1.23	8.57						2.08								18.75
35	1.76	8.23						3.62								19.43
51	3.28	7.78						13.06								19.19
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Appendix A (Continued).

WEEK# 89 10/27/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.60	8.56	17.45	8.92	3.52	0.28	30.17	10.37	1.32	4.46	12.80	28.95	1.20	0.01	1928.	0.98
2	2.53	8.34	15.40	10.01	3.60	0.30	29.31	9.41		5.98	12.39	27.78	0.30	0.01	1904.	0.30
3	1.62	8.20	9.70	6.68	2.21	0.29	18.88	2.96		5.42	11.40	19.78	1.56	0.01	1378.	18.86
4	1.35	8.20	6.86	6.58	1.98	0.11	15.53	2.31		6.60	6.90	15.81	19.30	0.01	1134.	19.19
5	1.53	8.20	8.37	8.34	2.17	0.23	17.11	3.87		3.70	9.22	16.79	0.05	0.02	1161.	19.33
6	2.38	8.22	9.59	15.04	4.84	0.36	29.83	3.35		6.14	21.29	30.78	1.90	0.01	2111.	19.48
7	1.92	8.37	8.81	10.17	3.56	0.25	22.79	3.67	0.36	6.74	11.24	22.01	0.05	0.01	1551.	19.98
8	3.29	8.28	21.93	13.65	5.77	0.38	41.73	6.63		9.46	24.67	40.76	0.06	0.01	2860.	19.20
9	4.00	7.98	24.33	15.80	7.16	0.42	47.71	5.75		9.58	30.40	45.73	0.10	0.01	3228.	18.60
10	1.81	8.01	11.95	6.52	2.35	0.15	20.97	2.30		11.58	7.23	21.11	0.15	0.01	1575.	19.55
11	1.23	8.22	6.09	6.72	1.50	0.13	14.44	2.04		6.58	5.62	14.24	0.80	0.01	1042.	19.72
12	2.49	8.61	16.19	9.60	3.58	0.28	29.65	9.05	0.48	4.86	12.80	27.19	1.05	0.01	1866.	1.80
13	1.54	8.26	8.98	6.96	1.83	0.20	17.97	2.69		7.86	6.92	17.47	0.03	0.01	1283.	19.35
14	2.74	8.07	15.52	15.59	3.67	0.11	34.89	5.49		11.02	17.28	33.79	0.23	0.01	2415.	18.98
15	2.85	8.19	17.65	12.96	4.51	0.22	35.34	6.61		9.26	18.42	34.29	0.05	0.01	2413.	19.55
16	2.15	8.52	12.61	8.04	2.96	0.21	23.82	6.80	0.84	5.74	10.41	23.79	1.02	0.01	1612.	2.90
17																
18																
19	1.86	8.02	8.98	9.71	2.99	0.15	21.83	3.28		10.28	8.74	22.30	0.75	0.01	1607.	19.23
20	2.63	8.23	18.13	10.56	4.08	0.24	33.01	4.53		13.18	14.00	31.71	0.15	0.01	2325.	19.71
21																
22	0.81	8.53	4.33	3.44	1.00	0.19	8.96	1.40	0.80	3.36	3.20	8.76	2.50	0.31	620.	
23																
24	2.60	8.26	12.50	16.91	4.06	0.58	34.05	2.85		8.40	22.48	33.73	11.04	0.01	2392.	19.78
25	2.72	8.15	19.10	7.01	2.96	0.32	29.39	11.81		3.32	12.80	27.93	1.26	0.01	1864.	20.81
26																19.63
27	3.48	8.53	25.00	8.92	4.00	0.33	38.25	16.65	0.76	3.50	15.61	36.52	1.26	0.01	2391.	20.37
28																20.09
29	2.57	8.44	16.88	8.65	3.27	0.40	28.80	9.28	0.40	4.32	13.74	27.74	1.17	0.01	1881.	19.64
30	2.11	7.63	8.01	11.65	3.65	0.20	23.51	2.81		3.82	19.21	25.84	0.05	0.01	1725.	18.55
31																
32																18.30
33	1.36	8.48	9.39	4.22	1.58	0.28	15.47	2.34	0.84	5.64	6.31	15.13	0.67	0.01	1086.	18.95
35	1.87	8.39	12.53	6.52	2.07	0.37	21.49	3.72	0.96	8.78	8.26	21.72	0.13	0.01	1551.	19.78
51	2.37	8.05	12.16	9.19	5.14	0.32	26.81	7.08		6.18	15.47	28.27	0.25	0.01	1910.	19.59
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Appendix A (Continued).

WEEK# 90 11/ 3/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.44	8.43						10.31								0.84
2	2.34	8.29						9.67								0.20
3																18.69
4	1.13	8.46						1.98								19.07
5	1.25	8.47						2.96								19.20
6	2.25	8.01						3.26								19.28
7	1.81	8.34						3.37								19.49
8	3.16	8.15						6.45								19.04
9	4.23	8.30						11.29								18.72
10	1.27	8.30						2.24								19.41
11	1.20	8.42						4.02								19.42
12	2.35	8.45						8.96								1.76
13	1.53	8.28						2.87								19.29
14	2.67	8.26						5.91								18.93
15	2.68	8.24						9.66								19.39
16	1.79	8.49						5.67								2.88
17	1.31	7.85						2.27								19.56
18																
19	1.75	7.93						3.14								19.21
20	2.55	8.13						4.70								19.58
21																
22	0.90	8.29						1.88								
23	1.31	8.48						2.78								19.23
24	1.39	8.35						2.55								19.28
25																
26																
27																
28																
29																
30																
31																
32																
33	1.27	8.36						2.42								18.90
35	1.75	8.31						3.58								19.65
51	2.37	8.12						6.90								19.41
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Appendix A (Continued).

WEEK# 91 11/10/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.50	8.25						7.69								0.84
2	2.34	8.29						9.23								0.20
3	1.79	7.95						3.13								18.59
4	1.21	7.83						2.09								19.05
5	1.03	8.04						2.14								19.16
6	2.45	7.77						3.63								19.25
7	2.02	8.25						3.82								19.46
8	3.26	7.75						6.50								19.01
9	4.38	7.74						11.39								18.69
10	1.63	8.01						2.24								19.35
11	1.15	7.97						1.95								19.32
12	2.12	8.27						7.62								2.04
13	1.71	8.06						4.43								19.27
14	2.48	7.87						5.31								18.91
15	2.53	8.12						6.73								19.38
16	1.57	8.45						4.94								2.94
17	1.29	8.03						2.24								19.60
18																
19	1.75	7.79						3.08								19.06
20	2.48	8.24						4.52								19.56
21																
22	1.11	8.33						3.13								
23	1.25	7.69						2.64								19.14
24	2.44	7.78						2.34								19.57
25																
26																
27																
28																
29																
30																
31																
32																
33	1.39	8.34						2.70								18.91
35	1.84	7.98						4.18								19.65
51	1.99	8.55						5.99								19.37
52																
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Appendix A (Continued).

WEEK# 92 11/17/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.60	8.38						10.86								0.82
2	2.46	8.73						9.67								0.20
3	1.96	8.63						3.52								18.71
4	1.34	8.30						2.11								19.09
5	0.98	8.02						1.94								19.16
6	2.54	8.69						3.82								19.24
7	2.22	8.53						4.18								19.48
8	3.13	8.32						6.23								19.29
9	4.01	8.49						10.13								18.68
10	1.58	8.72						2.28								19.32
11	1.20	8.19						1.94								19.32
12	2.16	8.64						8.00								2.12
13	1.83	8.69						5.05								19.20
14	2.54	8.53						5.37								18.90
15	2.71	8.66						7.00								19.09
16	1.57	8.72						4.92								3.00
17	1.45	8.54						2.86								19.63
18																
19	1.50	8.70						2.51								19.00
20	2.57	8.34						4.47								19.55
21																
22																
23																
24																19.09
25																19.55
26																
27																
28																
29																
30																
31																
32																
33																
34																
35																18.95
51	2.23	8.17						5.43								19.66
52																19.35
53																
54																
55																
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58																
59																
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Appendix A (Continued).

WEEK# 93 11/24/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.52	8.56						10.32								0.84
2	2.40	8.56						9.32								0.20
3	1.46	8.50						3.41								18.72
4	1.37	8.36						2.23								19.10
5	0.97	8.57						1.93								19.16
6	2.78	8.14						3.89								19.24
7	1.80	8.35						2.86								19.47
8	3.18	8.18						6.33								18.99
9	3.54	8.23						8.71								18.75
10	1.91	8.22						2.56								19.30
11	1.22	8.21						1.68								19.31
12	2.06	8.42						7.13								2.14
13	1.79	8.35						4.55								19.28
14	2.70	8.09						5.51								18.91
15	2.74	8.36						6.77								19.10
16	1.46	8.43						4.24								3.08
17	1.47	8.10						2.77								19.62
18																
19	1.53	7.90						2.45								19.29
20																19.55
21																
22	1.20	8.41						3.19								
23	1.22	8.12						1.91								19.08
24	2.60	7.99						2.35								19.55
25																
26																
27																
28																
29																
30																
31																
32																
33	1.29	8.54						2.12								19.03
35	2.41	8.15						6.12								19.66
51	2.36	8.53						5.48								19.35
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Appendix A (Continued).

WEEK# 94 12/ 1/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.47	8.03	16.11	8.57	3.69	0.26	28.63	10.38		4.74	12.91	28.03	0.42	0.01	1874.	0.86
2	2.38	8.25	14.49	9.77	3.73	0.27	28.26	9.34		5.54	12.23	27.11	0.24	0.01	1841.	0.22
3	2.07	7.99	2.65	9.37	3.25	0.27	25.54	3.58		10.20	11.97	25.75	0.18	0.01	1623.	18.72
4	1.38	7.98	6.91	7.23	2.57	0.11	16.82	2.43		8.20	6.92	17.55	0.80	0.01	1258.	19.11
5	1.06	7.91	5.27	4.75	1.53	0.22	11.77	2.37		5.22	4.64	12.23	1.95	0.01	869.	19.18
6	2.89	7.87	12.85	15.98	8.37	0.43	37.63	2.09		8.88	25.61	36.58	0.10	0.01	2580.	19.25
7	1.79	8.10	10.17	9.08	2.62		22.07	3.32		8.90	10.41	22.63	0.05	0.01	1608.	19.49
8	3.05	8.05	22.05	12.44	5.38	0.34	40.21	6.43		9.52	24.25	40.20	0.55	0.01	2808.	18.96
9	3.04	7.95	21.68	12.44	5.96	0.30	40.40	8.15		8.20	24.46	40.81	0.02	0.01	2796.	18.69
10	1.87	7.90	12.07	7.99	2.82	0.12	23.00	2.73		11.50	9.26	23.49	0.10	0.01	1720.	19.30
11	1.19	7.96	5.52	7.05	1.51	0.14	14.22	1.94		7.26	5.31	14.51	0.45	0.01	1059.	19.31
12	2.01	8.30	11.68	7.64	2.83	0.22	22.37	7.50		5.30	10.20	23.00	0.08	0.02	1544.	2.22
13	1.96	7.96	11.68	7.64	2.39	0.22	21.93	5.49		7.06	10.20	22.75		0.01	1575.	19.30
14	2.53	7.98	13.90	17.14	4.02	0.12	35.18	5.08		10.92	18.11	34.11	0.16	0.01	2433.	18.92
15	2.55	8.15	16.21	12.08	4.08	0.18	32.75	6.61		8.16	16.66	31.43	0.02	0.01	2204.	19.41
16	1.40	8.29	8.01	5.56	1.99	0.17	15.73	4.52		5.04	6.22	15.78	0.05	0.01	1093.	3.10
17	1.28	7.88	5.89	6.69	2.03	0.17	14.78	2.33		7.12	5.66	15.11	0.05	0.01	1090.	19.64
18																
19	1.51	7.82	6.83	8.10	2.22	0.21	17.36	2.05		8.00	7.60	18.05	0.08	0.01	1280.	19.02
20	2.56	8.21	18.93	10.58	4.44	0.20	34.15	2.37		12.80	17.15	32.32	0.04	0.01	2398.	19.55
21																
22	1.12	8.36	6.91	3.53	1.33	0.18	11.95	3.24	0.56	3.44	5.10	12.34	0.31	0.10	839.	
23	1.25	7.85	5.39	6.33	1.72	0.10	13.54	1.99		6.50	5.35	13.84	1.25	0.01	1000.	19.08
24	2.44	7.90	11.27	15.62	4.48	0.60	31.97	2.36		9.30	21.03	32.69	0.06	0.01	2311.	19.57
25	2.59	8.04	17.93	6.93	3.13	0.26	28.25	11.78		2.92	12.49	27.19	0.27	0.01	1795.	20.41
26																
27	3.02	8.17	22.88	6.93	3.32	0.27	33.40	14.24		3.74	14.10	32.08	3.34	0.01	2126.	20.27
28																
29																
30																
31																
32																18.34
33	1.20	8.30	6.55	5.00	1.89	0.24	13.68	1.88		7.50	4.73	14.11	0.05	0.01	1035.	18.96
35	2.75	7.82	14.79	12.44	3.85	0.35	31.43	7.37		9.46	16.24	33.07	0.08	0.01	2268.	19.68
51	2.49	8.19	14.26	11.87	5.42	0.32	31.87	7.11		8.06	15.41	30.58	0.25	0.01	2128.	
52																
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Appendix A (Continued).

WEEK# 95 12/ 8/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.77	8.22						10.75								0.88
2	2.68	8.06						9.42								0.24
3	2.29	8.19						3.57								18.73
4	1.59	8.08						2.68								19.11
5	1.29	8.12						2.88								19.18
6	3.18	8.24						4.47								19.25
7	2.40	8.08						4.96								19.49
8	3.45	7.97						6.68								18.99
9	3.62	8.03						8.55								18.72
10	2.24	7.90						3.07								19.30
11	1.33	7.96						2.05								19.32
12	2.21	8.43						7.76								2.32
13	2.14	8.32						6.37								19.32
14	2.82	7.88						5.41								18.93
15	2.78	8.15						7.11								19.41
16	1.61	8.39						4.91								3.00
17	1.43	8.18						2.51								19.61
18																
19	1.38	7.72						2.12								19.01
20	2.98	8.06						5.35								19.55
21																
22	1.21	8.34						3.16								
23	1.29	7.84						1.98								19.08
24	2.46	7.89						2.31								19.55
25																
26																
27																
28																
29																
30																
31																
32																
33	1.16	8.30						1.71								18.98
50	2.72	7.92						6.57								19.66
51	2.73	7.56						8.06								19.37
52																
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Appendix A (Continued).

WEEK# 96 12/15/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.39	8.16														1.00
2	2.62	8.33														0.24
3	2.41	8.08														18.73
4	1.75	8.03														19.09
5	1.17	8.09														19.17
6	3.15	7.70														19.43
7	2.40	8.07														19.45
8	3.32	8.02														19.00
9	3.86	7.85														18.71
10	2.24	7.95														19.30
11	1.25	7.97														19.30
12	2.13	8.17														1.64
13	2.10	8.13														19.21
14	2.69	7.85														18.92
15	2.89	8.11														19.38
16	1.73	8.12														2.12
17	1.54	7.85														19.51
18								9.43								
19	1.61	7.79						9.98								18.98
20	2.87	8.14						3.82								19.52
21								3.39								
22	1.20	8.34						2.70								
23	1.27	7.81						4.39								19.04
24	4.39	7.81						4.92								19.52
25								6.63								
26								9.74								
27								3.32								
28								1.93								
29								8.07								
30								6.91								
31								5.61								
32								7.20								
33	1.20	8.34						5.70								
35	2.51	7.73						2.91								
51	3.01	7.65														
52								2.67								
53								5.58								
54																
55								3.26								
56								2.03								
57								2.35								
58																
59																
60																
																18.96
																19.62
																19.33
								1.64								
								0.11								
								10.99								

Appendix A (Continued).

WEEK# 97 12/22/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.66	7.91						10.83								0.94
2	2.60	7.85						10.04								0.22
3	2.49	7.46						3.86								18.73
4	1.98	7.47						4.32								19.10
5	1.06	7.39						2.20								19.16
6	3.13	7.20						4.38								19.21
7	2.38	7.56						4.60								19.43
8	3.37	7.69						6.43								18.98
9	3.79	7.43						9.07								18.66
10	2.21	7.61						3.06								19.27
11	1.28	7.29						1.97								19.23
12	2.37	7.90						8.94								1.54
13	2.36	7.51						8.39								19.16
14	2.65	7.61						5.31								18.92
15	2.83	8.31						7.39								19.36
16	1.68	7.91						5.53								1.86
17	1.62	7.47						3.18								19.41
18																
19	1.82	7.48						3.02								19.00
20	3.04	7.95						6.00								19.47
21																
22	1.15	8.06						3.13								
23	1.28	7.75						2.11								19.01
24	2.34	7.59						2.40								19.45
25																
26																
27																
28																
29																
30																
31																
32																
33	1.22	8.14						1.62								18.98
35	2.59	7.48						6.51								19.60
51	3.10	7.37						10.83								19.31
52	3.46	7.60						15.63								
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK# 98 12/29/78

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.60	8.10	16.37	9.04	3.76	0.26	29.43	10.83		5.02	12.70	28.55	0.66	0.01	1914.	0.94
2	2.56	8.24	15.17	9.87	3.63	0.27	28.94	10.08		5.64	12.70	28.42	0.18	0.01	1913.	0.24
3	2.59	8.13	13.10	11.74	4.08	0.28	29.20	4.06		10.90	16.45	31.41	0.39	0.01	2196.	18.73
4	2.31	7.82	12.77	9.87	3.45	0.14	26.23	5.46		8.72	12.49	26.67	0.21	0.01	1864.	19.08
5	1.03	8.11	5.24	4.21	1.28	0.15	10.92	2.19		4.82	4.04	11.05	0.12	0.01	794.	19.15
6	3.09	7.67	14.18	15.53	8.47	0.38	38.56	4.48		9.16	25.92	39.56	0.16	0.01	2718.	19.18
7	2.24	8.15	11.76	11.17	3.20	0.20	26.33	4.27		7.64	15.41	27.32	0.16	0.01	1899.	19.40
8	3.34	8.08	22.37	13.21	5.68	0.35	41.61	6.54		9.64	25.40	41.58	1.09	0.01	2902.	18.97
9	3.52	7.82	23.55	13.28	6.24	0.31	43.38	8.61		8.50	25.40	42.51	0.09	0.01	2939.	18.69
10	2.04	7.96	13.95	7.13	2.52	0.12	23.72	2.98		11.04	9.37	23.39	0.09	0.01	1728.	19.23
11	1.28	8.07	6.15	6.67	1.45	0.19	14.41	2.00		6.64	6.35	14.99	0.11	0.01	1081.	19.19
12	2.33	8.29	13.66	8.08	3.22	0.24	25.20	8.95		5.64	11.24	25.83	0.98	0.01	1726.	1.52
13	2.42	8.06	14.97	8.97	2.73	0.23	26.90	9.47		4.92	11.76	26.15	0.11	0.01	1767.	19.15
14	2.68	7.94	13.58	15.95	3.73	0.11	33.37	5.50		10.48	16.76	32.74	0.20		2321.	18.91
15	2.86	8.35	13.11	13.29	4.87	0.19	31.46	7.35	0.88	5.00	18.22	31.45	0.24	0.01	2101.	19.34
16	1.68	8.15	10.08	6.03	2.23	0.17	18.51	5.96		4.96	8.12	19.04	0.95	0.21	1290.	1.78
17	1.85	7.71	9.10	8.52	2.62	0.19	20.43	3.89		7.98	9.68	21.55	0.19		1509.	19.36
18																
19	1.79	7.89	8.64	9.05	2.57	0.20	20.46	2.94		9.72	8.74	21.40	0.09		1536.	18.97
20	2.98	8.27	17.82	10.59	5.31	0.20	33.92	5.98	1.28	7.28	17.59	32.13	0.13	0.01	2234.	19.44
21																
22	1.15	8.39	7.20	3.32	1.25	0.17	11.94	3.16	0.36	3.14	4.91	11.57	0.30	0.08	804.	
23	1.29	8.10	6.04	6.33	1.70	0.12	14.19	2.19	0.16	6.24	6.14	14.73	1.57	0.01	1049.	18.98
24	2.42	7.75	9.61	14.12	4.91	0.69	29.33	2.50		9.70	18.32	30.52	0.28	0.01	2151.	19.42
25																20.30
26																19.56
27																
28																19.89
29	2.58	8.33	15.50	8.86	3.55	0.34	28.25	9.07	0.20	3.86	14.26	27.39	0.93	0.01	1838.	19.45
30	2.68	7.49	13.05	12.95	4.86	0.26	31.12	2.90		5.52	24.57	32.99	0.11	0.01	2248.	18.54
31																
32																18.37
33	1.17	8.48	5.73	5.55	2.07	0.23	13.22	1.44	1.56	7.24	3.29	13.53	0.12	0.01	975.	18.98
35	2.73	7.72	15.60	11.57	3.86	0.32	31.35	7.23		8.20	16.65	32.08	0.11	0.08	2206.	19.55
51	3.05	8.14	15.87	14.63	6.24	0.37	36.11	11.19		6.52	16.76	34.47	0.50	0.01	2328.	19.27
52	3.51	8.38	28.75	7.05	3.84	0.38	40.02	16.37	0.44	6.78	16.14	39.73	2.57	0.01	2646.	
53																
54																
55																
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58																
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60																

Appendix A (Continued).

WEEK# 99 1/ 5/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.60	8.36						9.61								0.94
2	2.63	8.47						9.06								0.26
3	2.75	7.95						3.96								18.73
4	2.40	7.97						5.57								19.08
5	1.00	8.03						1.88								19.13
6	2.95	7.84						4.21								19.17
7	2.06	8.14						3.58								19.37
8	3.47	8.00						6.29								18.96
9	3.47	7.84						7.65								18.69
10	1.97	7.94						2.73								19.21
11	1.30	7.99						1.56								19.17
12	2.28	8.09						7.85								1.58
13	2.49	8.00						8.97								19.14
14	2.77	7.95						5.30								18.91
15	3.04	8.29						6.90								19.32
16	1.77	8.41						5.93								1.70
17	1.71	7.79						3.26								19.34
18																
19	1.79	8.32						2.91								18.96
20	3.07	8.13						5.79								19.45
21																
22	1.29	8.44						3.25								
23	1.36	8.02						2.21								18.98
24	2.44	7.84						2.43								19.39
25																
26																
27																
28																
29																
30																
31																
32																
33	1.23	8.50						1.31								18.97
35	2.80	7.77						6.92								19.53
51	3.22	8.24						10.69								19.26
52	3.57	8.49						15.12								19.28
53																
54																
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58																
59																
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Appendix A (Continued).

WEEK#100 1/12/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.58	8.09						10.21								0.94
2	2.50	8.15						9.12								0.31
3																
4	2.39	7.56						5.55								19.07
5	0.96	7.84						1.80								19.12
6	2.91	7.31						4.00								19.16
7	1.96	7.63						3.31								19.38
8	3.31	7.93						6.18								18.95
9	3.30	7.45						7.83								18.98
10	1.91	7.56						2.64								19.20
11																
12	2.28	8.11						8.86								1.64
13	2.50	7.79						9.72								19.13
14	2.68	7.64						5.21								18.90
15	3.10	8.17						7.07								19.30
16	1.60	8.20						5.23								1.62
17	1.46	7.62						2.69								19.32
18																
19	1.72	7.96						2.76								18.94
20	3.05	7.78						5.66								19.43
21																
22	1.13	7.92						3.00								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.17	8.27						1.22								18.96
35	2.60	7.57						6.34								19.51
51	3.06	7.46						11.04								19.26
52	3.38	7.59						15.43								19.26
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#101 1/19/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.55	7.94						10.06								0.92
2	2.49	8.16						9.07								0.30
3																
4																
5	0.96	7.95						1.83								19.12
6	2.90	7.59						4.15								19.15
7	1.89	7.81						3.03								19.34
8	3.31	8.02						6.23								18.94
9	3.36	7.53						8.13								18.68
10	1.89	8.08						2.75								19.17
11																
12	2.19	8.23						8.23								1.62
13	2.49	8.06						9.98								19.12
14	2.60	7.78						5.05								18.90
15	3.21	8.16						7.35								19.27
16	1.55	8.37						5.14								1.54
17	1.44	8.14						2.70								19.29
18																
19	1.72	8.05						2.91								18.94
20	2.81	8.36						5.37								19.39
21																
22	1.34	8.37						3.20								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.17	8.45						1.28								18.96
35	2.48	8.04						6.65								19.49
51	3.28	8.39						13.69								19.23
52	3.32	7.99						14.94								19.25
53																
54																
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56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#102 1/26/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.65	8.22	15.36	8.83	3.62	0.24	28.05	10.44		4.98	11.87	27.29	0.55		1828.	0.88
2	2.61	8.31	15.16	10.03	3.62	0.24	29.05	9.70		5.92	11.87	27.49	0.05		1878.	0.30
3																
4																
5	1.01	8.14	5.10	4.15	1.21	0.16	10.62	1.95		4.24	4.04	10.23	0.04		743.	19.11
6	3.10	7.87	14.67	15.59	8.44	0.35	39.05	4.28		9.62	26.44	40.34	0.05		2775.	19.15
7	1.91	8.02	10.05	8.97	2.45	0.15	21.62	3.15		8.80	9.58	21.53	0.05		1555.	19.34
8	3.45	8.06	23.99	13.61	5.65	0.31	43.56	6.50		10.00	24.88	41.38	0.63		2941.	18.94
9	3.48	7.75	22.86	11.76	6.47	0.28	41.37	8.43		8.42	24.98	41.83	0.07		2863.	18.67
10	2.01	7.93	12.87	7.25	2.45	0.11	22.68	2.91		11.32	8.85	23.08	0.10		1694.	19.18
11																
12	2.21	8.17	12.74	7.59	2.93	0.19	23.45	8.25		4.70	9.58	22.53	1.00		1527.	1.60
13	2.09	8.07	17.15	8.63	2.66	0.23	28.61	11.31		4.06	12.07	27.44	0.64		1836.	19.12
14	2.81	7.99	13.81	14.70	3.26	0.05	31.82	5.11		10.66	15.41	31.18	0.19		2225.	18.90
15	3.29	8.08	18.92	16.21	5.67	0.17	40.97	7.86		9.64	21.65	39.15	0.22		2742.	19.29
16	1.69	8.27	9.79	5.75	2.14	0.16	17.84	5.89		4.66	6.74	17.29	0.94		1189.	1.62
17	1.46	7.81	7.24	6.46	2.02	0.15	15.87	2.32		7.54	6.66	16.52	0.20		1188.	19.30
18																19.17
19	1.88	7.95	9.25	9.32	2.63	0.19	21.39	3.17		10.30	8.64	22.11	0.05		1595.	18.94
20	2.94	8.07	18.30	8.92	5.41	0.17	32.80	5.60		12.40	16.24	34.24	0.05		2407.	19.41
21																
22	1.15	8.25	7.33	3.31	1.27	0.15	12.06	3.18		3.72	4.66	11.56	0.26		820.	
23																
24																
25																20.23
26																19.54
27																
28																19.83
29	2.61	8.15	15.16	9.12	3.57	0.31	28.16	8.91		4.74	14.78	28.43	0.05		1902.	19.43
30	2.41	7.74	12.14	10.99	4.09	0.23	27.45	2.59		6.48	20.40	29.47	0.03		2025.	18.53
31																
32																18.37
33	1.21	8.24	5.73	5.93	2.20	0.20	14.06	1.38		9.50	3.04	13.92	0.06		1060.	18.97
35	2.67	7.83	15.87	10.72	3.74	0.28	30.61	6.60		9.10	15.41	31.11	0.20		2165.	19.50
51	3.62	7.99	20.80	13.81	6.16	0.38	41.15	16.10		5.58	17.49	39.17	0.50		2596.	19.23
52	3.53	8.13	27.81	6.97	3.81	0.37	38.96	15.79		6.70	15.41	37.90	2.05		2548.	19.25
53																
54																
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Appendix A (Continued).

WEEK#103 2/ 2/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.77	8.48						11.06								0.86
2	2.53	8.51						9.30								0.28
3																
4																
5	1.02	8.16						2.01								19.11
6	3.06	7.75						4.06								19.14
7	2.04	8.08						3.40								19.10
8	3.38	7.92						6.32								18.94
9	3.31	7.99						7.98								18.67
10	1.92	7.79						2.84								19.18
11																
12	2.54	8.50						10.78								1.56
13	2.58	8.07						10.21								19.15
14	2.59	7.93						4.88								18.90
15	3.25	8.11						7.36								19.42
16	1.62	8.22						5.41								2.02
17	1.30	7.71						2.05								19.36
18																19.20
19	1.85	8.43						3.13								18.93
20	2.93	8.37						5.52								19.39
21																
22	1.17	8.30						3.24								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.15	8.61						1.25								18.94
35	2.37	7.99						5.45								19.48
51	3.56	8.33						16.14								19.23
52	3.47	8.48						15.18								19.25
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#104 2/ 9/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.63	8.25						10.64								0.85
2	2.52	8.30						9.79								0.25
3																
4																
5	1.12	8.13						2.35								19.10
6	2.93	7.63						4.05								19.15
7																19.35
8	3.25	7.93						6.24								18.93
9	3.24	7.73						8.22								18.67
10	1.90	7.81						3.17								19.18
11																
12	2.09	8.19						7.83								1.54
13	2.25	7.62						9.75								19.16
14	2.41	7.74						4.81								18.89
15	3.10	7.73						7.64								19.41
16	1.47	7.99						4.85								2.20
17	1.27	7.66						2.03								19.39
18	5.42	7.69						14.38								19.27
19	1.75	7.86						2.91								18.93
20	2.91	7.90						5.61								19.40
21																
22	1.06	8.22						2.72								
23																
24																
25	2.70	7.99						11.84								
26	4.94	10.36						9.01								20.21
27																
28	2.53	8.44						10.06								
29																19.85
30																
31	8.38	6.72						77.18								
32																
33	1.16	8.16						1.29								
35	2.38	7.71						5.10								18.95
51	3.69	8.14						17.14								19.49
52	3.43	8.30						15.17								19.24
53																19.25
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#105 2/16/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.59	7.88						10.64								0.83
2	2.58	8.04						10.22								0.24
3																
4																
5	1.13	7.93						2.33								19.10
6	3.03	7.53						4.18								19.17
7	2.19	7.68						4.15								19.36
8	3.22	7.82						6.25								18.95
9	3.29	7.58						8.45								18.97
10	2.13	7.65						3.36								19.20
11																
12	2.01	8.11						7.47								1.56
13	2.19	7.88						7.67								19.18
14	2.44	7.68						4.94								18.90
15	2.95	7.82						6.71								19.42
16	1.56	7.86						5.26								2.35
17	1.34	7.58						2.18								19.44
18	5.67	7.44						15.39								19.32
19	1.74	7.86						2.80								18.94
20	3.05	7.68						6.02								19.42
21																
22	1.07	7.84						3.02								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.19	7.97						1.49								18.94
35	2.14	7.36						4.42								19.54
51	3.76	7.63						17.86								19.26
52	3.45	7.98						15.26								19.28
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#106 2/23/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.77	8.21	15.50	9.16	3.81	0.25	28.72	10.92		4.82	11.87	27.61	0.35	0.19	1847.	0.82
2	2.73	8.39	15.50	10.82	4.05	0.26	30.63	10.55	1.04	5.56	12.07	29.22	0.15	0.01	1957.	0.24
3																
4																
5	1.15	8.14	5.51	5.18	1.47	0.17	12.33	2.36		4.36	5.12	11.84	0.30	0.02	851.	19.15
6	3.16	7.85	14.55	10.55	9.04	0.33	40.47	4.14		9.02	25.71	38.87	0.10		2721.	19.17
7	2.31	8.00	11.71	10.70	2.90	0.17	25.48	4.04		8.96	11.99	24.99	0.10		1791.	19.41
8	3.58	7.98	24.36	14.31	5.98	0.31	44.96	6.54		10.74	25.61	42.89	0.36	0.01	3049.	18.95
9	3.43	7.89	20.56	11.56	6.26	0.26	38.64	8.79		8.02	19.99	36.80	0.17		2552.	18.68
10	2.21	7.86	13.61	8.77	3.00	0.11	25.49	3.55		10.64	10.45	24.64	1.85		1806.	19.21
11																
12	2.23	8.33	12.95	7.71	2.84	0.22	23.72	7.97	0.60	4.32	9.83	22.72	0.16	0.03	1532.	1.54
13	2.21	8.15	14.00	6.89	2.05	0.18	23.12	7.23		5.28	9.83	22.34	0.10	0.03	1542.	19.19
14	2.59	7.93	12.74	15.10	3.31	0.09	31.24	5.09		10.64	14.57	30.30	0.39		2169.	18.90
15	3.12	8.24	17.51	19.25	5.14	0.15	37.05	6.95		9.38	19.05	35.38	0.14	0.01	2590.	19.42
16	1.41	8.24	8.39	4.90	1.74	0.14	15.17	4.25		4.42	5.83	14.50	0.50	0.02	1018.	2.38
17	1.41	7.85	6.67	6.70	2.30	0.14	15.81	2.28		6.98	6.00	15.26	2.90	0.02	1116.	19.45
18	6.10	7.81	35.27	31.08	12.82	1.25	80.42	15.98		15.10	45.59	76.67	0.58	0.02	5316.	19.33
19	1.87	8.02	9.48	8.95	2.67	0.19	21.29	3.05		9.66	7.81	20.52	0.20	0.01	1510.	18.94
20	3.31	7.99	20.56	12.40	5.88	0.17	39.01	6.42		12.44	18.74	37.60	0.14	0.01	2686.	19.44
21																
22	1.18	8.29	7.35	3.39	1.26	0.16	12.16	3.10		4.20	4.52	11.82	0.40	0.10	842.	
23																
24																
25	2.72	7.96	18.18	7.64	3.02	0.22	28.46	11.38		4.06	11.87	27.31	0.19	0.01	1838.	20.22
26	5.34	8.92	52.89	3.84	2.91	0.43	60.07	9.53	0.60	6.32	40.81	57.26	0.23	0.01	4047.	19.55
27																
28	2.74	8.25	17.98	7.72	3.37	0.22	29.29	10.64		4.68	12.91	28.23	0.96	0.01	1900.	19.86
29	2.70	8.27	16.04	8.50	3.68	0.31	28.53	8.60		4.88	13.95	27.43	0.19	0.01	1869.	19.45
30	2.22	7.49	11.22	8.98	3.30	0.19	23.69	2.55		5.76	16.13	24.44	0.13	0.01	1702.	18.52
31	7.27	6.87	41.21	22.35	8.36	0.44	72.36	58.18		1.44	13.74	73.36	0.15	0.01	4324.	
32																18.37
33	1.26	8.03	6.15	4.73	1.96	0.21	13.05	1.65		9.00	3.08	13.73	0.15	0.02	1024.	18.95
35	2.16	7.57	12.63	7.19	2.56	0.38	22.76	4.40		8.74	10.08	23.22	0.24	0.02	1654.	19.55
51	3.91	8.10	22.32	14.25	6.32	0.38	43.27	18.44		6.72	17.80	42.96	0.22	0.02	2809.	19.26
52	3.55	8.33	28.33	7.39	4.09	0.38	40.19	15.12	0.32	4.04	15.41	38.89	1.70	0.18	2396.	19.28
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#107 3/ 2/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.85	8.16						10.32								0.87
2	2.78	8.24						9.40								0.28
3																
4																
5	1.20	7.91						2.19								19.08
6	3.29	7.75						4.03								19.14
7	2.36	8.02						4.01								19.32
8	3.71	8.25						6.34								18.94
9	3.59	7.78						8.44								18.67
10	2.20	8.19						3.31								19.18
11																
12	2.59	8.04						9.07								1.60
13	2.37	8.14						7.40								19.11
14	2.70	7.81						5.00								18.90
15	3.25	7.96						6.66								19.27
16	1.76	8.04						5.21								1.11
17	1.48	8.04						2.03								19.23
18	6.40	7.74						15.29								19.08
19	1.97	8.07						2.93								18.94
20	3.38	8.10						5.96								19.38
21																
22	1.17	8.37						2.81								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.25	8.49						1.30								18.94
35	2.09	8.30						3.74								19.47
51	4.11	8.15						17.71								19.23
52	3.76	8.05						15.18								19.24
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#108 3/ 9/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1								10.34								0.82
2	2.75	8.04						9.63								0.26
3	2.71	7.95														
4								2.40								19.08
5	1.26	8.01						4.21								19.11
6	3.22	7.65						3.88								19.29
7	2.31	7.81						6.58								18.91
8	3.75	7.69						8.39								18.96
9	3.55	7.76						3.14								19.15
10	2.13	7.87														
11								9.26								1.54
12	2.52	8.19						10.46								19.08
13	2.77	8.03						5.20								18.87
14	2.62	7.93						6.45								19.25
15	3.07	7.98						5.21								1.05
16	1.70	8.04						2.22								19.18
17	1.48	7.73						15.35								18.98
18	6.27	7.58						2.87								18.93
19	1.87	8.00						5.88								19.28
20	3.21	7.85														
21								1.98								
22	1.10	7.96														
23																
24																
25																
26																
27																
28																
29																
30																18.91
31																19.41
32								1.20								19.19
33	1.22	8.17						3.20								19.20
35	1.77	7.61						17.45								
51	3.95	7.69						14.87								
52	3.67	8.32														
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#109 3/16/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.65	8.16						11.05								1.04
2	2.62	8.22						10.28								0.35
3																
4																
5	1.24	7.98						2.69								19.08
6	2.98	7.77						4.12								19.11
7	2.33	7.82						4.21								19.29
8	3.64	7.79						6.77								18.91
9	3.46	7.90						8.90								18.66
10	2.11	7.84						3.38								19.12
11																
12	2.36	8.16						9.59								1.54
13	2.86	7.92						12.57								19.07
14	2.53	7.81						5.45								18.87
15	2.90	8.15						6.80								19.25
16	1.57	7.95						5.37								1.06
17	1.54	7.88						2.71								19.19
18	5.92	7.73						16.26								18.97
19	1.80	7.89						3.07								18.88
20	3.16	7.95						6.44								19.33
21																
22	0.80	8.17						1.53								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.23	8.20						1.53								18.93
35	1.62	7.91						2.80								19.43
51	3.81	7.89						18.55								19.19
52	3.56	8.05						16.06								19.20
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#110 3/23/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.58	7.93						10.82								0.88
2	2.55	7.99						9.79								0.24
3																
4																
5	1.26	7.81						2.73								19.09
6	2.89	7.66						4.09								19.12
7	2.34	7.76						4.24								19.31
8	3.45	7.78						6.48								18.92
9	3.44	7.62						8.89								18.66
10	2.C0	7.74						3.17								19.15
11																
12	2.27	8.08						9.30								1.54
13	2.72	7.84						12.16								19.08
14	2.47	7.81						5.21								18.88
15	2.89	7.80						6.77								19.28
16	1.63	8.03						5.76								1.10
17	1.60	7.74						2.75								19.23
18	5.88	7.63						15.36								18.97
19	1.77	7.64						2.96								18.91
20	3.12	7.77						6.01								19.35
21																
22	0.66	8.09						1.23								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.22	7.81						1.34								18.97
35	1.54	7.56						2.47								19.49
51	3.71	7.63						19.16								19.20
52	3.51	7.75						16.00								19.22
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#111 3/30/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.64	8.28	16.80	8.85	3.81	0.24	29.70	9.89	0.84	4.08	13.43	28.24	0.34		1889.	0.90
2	2.58	8.34	15.49	9.99	4.00	0.27	29.75	9.15	1.72	4.14	13.64	28.65	0.03		1899.	0.24
3																
4																
5	1.49	8.24	7.19	8.26	2.32	0.21	17.98	3.68	0.92	4.80	7.95	17.35	0.35		1200.	19.44
6	2.66	7.91	12.67	14.81	7.61	0.29	35.38	3.96		8.74	23.32	36.03	0.35		2486.	19.16
7	2.20	8.06	11.70	11.93	3.35	0.18	27.16	4.17		8.98	13.64	26.79	0.35		1907.	19.37
8	3.46	7.84	22.90	12.12	6.10	0.31	41.43	6.24		10.10	25.61	41.95	0.38		2923.	18.94
9																
10	1.90	7.82	13.05	7.05	2.35	0.13	24.58	3.32		10.14	8.41	21.87	1.80		1615.	19.19
11																
12	2.21	8.13	12.82	7.03	3.20	0.21	23.26	7.80		4.38	10.49	22.67	0.84		1530.	1.62
13	2.82	8.08	17.92	9.10	4.66	2.29	29.97	10.66		3.52	13.74	27.92	2.90		1969.	19.09
14	2.41	8.06	11.65	15.73	3.44	0.10	30.92	4.63	0.44	8.98	16.03	30.08	0.88		2124.	18.97
15	2.85	7.99	17.24	13.38	4.90	0.15	35.67	6.08		9.20	19.57	34.85	0.87		2447.	19.33
16	1.54	8.27	9.19	5.06	1.91	0.16	16.32	5.86	0.68	3.66	6.70	16.90	0.81		1115.	1.18
17	1.82	7.91	7.85	8.92	2.80	0.17	19.74	3.82		8.26	8.99	21.07	12.50		1471.	19.32
18	6.09	7.74	37.44	26.04	13.08	1.04	77.60	15.72	1.16	13.24	44.97	75.09	0.23		5142.	18.98
19	1.71	7.96	8.95	7.47	2.22	0.20	18.84	2.87		9.24	7.04	19.15	0.41		1394.	18.94
20	3.37	7.99	19.97	11.16	5.82	0.17	37.12	6.88		9.96	20.51	37.35	0.94		2597.	19.40
21																
22	0.62	8.19	2.96	2.34	0.72	0.13	6.15	1.09		2.98	2.29	6.36	2.32		459.	
23																
24																
25	2.83	7.78	19.32	7.53	3.32	0.22	30.39	12.59		5.00	13.84	31.43	0.27		2060.	20.12
26	5.78	8.12	52.88	6.42	5.29	0.42	65.01	10.40		6.46	48.30	65.16	0.25		4508.	19.54
27																
28	3.02	8.10	19.17	8.60	3.68	0.23	31.68	12.50		5.50	14.47	32.47	3.20		2140.	19.79
29	2.73	8.10	15.92	9.80	3.96	0.30	29.98	8.69		6.06	14.89	29.64	0.70		2015.	19.40
30	1.99	7.92	10.46	9.05	3.13	0.21	22.85	2.08		7.94	12.60	22.62	0.02		1631.	18.55
31	6.65	7.12	41.53	17.62	7.41	0.50	67.06	52.44		1.80	12.07	66.31	0.36		3966.	
32																
33	1.30	7.87	6.31	6.21	2.51	0.21	15.24	1.65		8.88	4.20	14.73	0.34		1110.	18.43
55	1.32	7.91	8.33	4.99	1.78	0.18	15.28	1.89		7.74	4.91	14.54	0.35		1095.	19.05
51	3.84	7.76	23.02	14.03	6.02	0.36	43.43	10.72		6.42	18.11	41.25	0.45		2752.	19.56
52	3.54	8.03	27.53	8.28	4.61	0.39	40.81	18.07		4.46	17.28	39.81	1.63		2613.	19.24
53																19.26
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#112 4/ 6/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																
21																
22																
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33																
35																
51																
52																
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#113 4/13/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.64	8.18						10.66								1.14
2	2.48	8.09						9.09								0.50
3																
4																
5	0.96	7.45						1.88								19.32
6	2.71	7.92						4.05								19.39
7	1.74	7.83						3.46								19.61
8	2.25	8.00						4.33								19.17
9	3.30	7.91						8.71								18.85
10	1.80	8.08						3.04								19.49
11																
12	2.32	8.14						9.18								1.70
13	2.38	7.84						9.29								19.39
14	2.52	7.78						5.48								19.07
15	2.76	8.42						6.46								19.53
16	1.70	8.06						5.86								1.22
17	1.86	7.85						4.70								19.42
18	5.63	8.05						10.24								19.07
19	1.69	8.55						3.01								19.23
20	3.20	8.17						7.22								19.68
21																
22	0.64	8.46						1.21								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.18	8.51						1.56								19.26
35	1.35	8.67						2.08								19.83
51	3.73	7.76						18.71								19.50
52	3.56	7.81						17.32								19.51
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#114 4/20/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.73	8.11						11.03								1.44
2	2.60	8.30						9.97								0.46
3																
4																
5	1.00	7.41						1.67								19.26
6	2.99	7.54						3.98								19.32
7	2.20	7.55						4.23								19.53
8	2.65	7.65						5.00								19.08
9	3.66	7.62						9.97								18.79
10	1.88	7.57						3.18								19.37
11																
12	2.27	7.67						8.92								1.70
13	2.74	7.80						11.39								19.17
14	2.60	7.64						5.48								19.02
15	2.80	7.73						6.47								19.48
16	1.63	8.09						5.55								1.18
17	1.81	7.60						4.01								19.37
18	6.01	7.58						11.68								19.03
19	1.84	7.56						2.95								19.12
20	3.21	7.61						6.93								19.58
21																
22	0.60	7.78						1.04								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.24	7.71						1.52								19.26
35	1.43	7.51						2.23								19.74
51	3.87	7.58						22.61								19.41
52	3.66	7.78						17.74								19.40
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#115 4/27/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.57	8.23	16.35	5.75	3.72	0.25	26.07	9.97		4.94	11.24	26.15	0.70	0.73	1741.	1.30
2	2.00	8.25	11.86	8.05	3.00	0.24	23.15	8.54		4.92	9.06	22.52	0.47	0.10	1518.	0.76
3																
4																
5	1.44	8.04	6.58	6.21	2.40	0.65	15.84	2.89		5.44	6.91	15.24	0.86	0.47	1097.	19.25
6	2.81	7.97	13.30	13.71	7.85	0.36	35.22	4.16		8.86	21.66	34.80	8.68	0.49	2418.	19.30
7	2.26	8.04	10.98	11.27	3.25	0.18	25.68	4.39		8.74	13.33	26.46	0.29	0.73	1854.	19.57
8	3.28	8.25	22.03	11.52	5.87	0.30	39.67	6.22		9.50	23.42	39.14	0.35	0.92	2745.	19.33
9	2.86	7.93	17.48	10.32	4.86	0.22	32.88	8.92		6.16	17.48	32.61	8.69	0.86	2208.	19.15
10	1.92	7.93	12.12	6.58	2.28	0.11	21.09	2.46		9.27	8.58	20.31	0.12	0.73	1507.	19.58
11																
12	2.00	8.19	11.54	7.14	2.80	0.19	21.67	7.60		4.18	8.41	20.19	1.15	0.50	1378.	1.84
13	2.89	8.22	14.73	8.85	4.06	0.26	27.90	12.63		3.24	13.12	28.99	2.91	0.60	1851.	19.18
14	2.69	7.92	14.25	13.65	3.85	0.10	31.85	5.66		9.88	16.55	32.09	0.29	0.80	2250.	19.18
15	2.89	8.04	18.15	12.90	4.93	0.15	36.13	6.84		8.92	20.81	36.37	0.19	0.86	2518.	19.48
16	1.56	8.11	9.60	5.26	2.04	0.15	17.05	5.34		4.46	6.41	16.21	1.12	0.54	1126.	1.18
17	1.69	8.18	9.08	8.07	2.36	0.17	19.68	3.42		7.54	7.66	18.62	9.95	0.60	1355.	19.39
18	6.38	8.11	31.01	21.39	15.73	1.23	82.33	14.38		15.16	47.81	77.45	0.34	1.33	5112.	19.07
19	1.86	8.13	9.60	9.93	2.88	0.16	22.57	3.08		9.68	9.27	22.03	0.08	0.62	1606.	19.28
20	3.22	8.25	19.84	13.85	5.79	0.13	39.61	6.12		12.66	19.15	37.93	0.31	0.80	2718.	19.65
21	0.94	7.90	4.98	3.19	1.18	0.44	9.79	2.15		2.06	5.57	9.78	0.36	0.40	679.	20.15
22	0.60	8.17	3.26	2.18	0.72	0.11	6.27	2.00		2.58	1.85	6.43	1.07	0.41	449.	
23																
24																
25	2.84	7.99	17.10	7.45	3.47	0.22	28.24	12.22		3.26	13.43	28.91	0.75	0.60	1870.	20.36
26	5.86	8.18	56.82	7.42	5.64	0.48	70.36	10.89		7.12	53.30	71.31	1.31	1.30	4923.	19.65
27																
28	3.05	8.20	22.87	8.71	3.69	0.23	35.50	12.39		7.12	14.89	34.40	3.64	0.67	2343.	19.94
29	3.18	8.09	19.25	11.07	4.58	0.40	35.30	11.75		5.42	16.86	34.03	0.19	0.32	2293.	19.52
30	1.93	8.25	9.20	9.12	2.67	0.20	21.19	2.11		6.92	12.60	21.63	0.19	0.80	1537.	18.71
31	6.21	8.12	41.62	13.58	8.56	0.65	64.41	38.29		14.22	10.49	63.00	0.19	0.66	4087.	
32																18.61
33	1.34	8.24	6.50	5.43	1.93	0.21	14.07	1.74		8.94	4.01	14.69	3.20	0.43	1090.	19.28
35	1.44	8.10	7.90	5.80	2.02	0.18	15.90	2.08		8.68	5.58	16.34	0.15	0.37	1201.	19.76
51	3.99	8.04	26.77	14.07	6.10	0.37	47.31	19.52		9.04	17.38	46.94	0.10	0.75	3064.	19.55
52	3.76	8.08	29.45	8.98	4.96	0.40	43.79	17.88		7.76	18.32	43.96	1.15	0.75	2920.	19.53
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#116 5/ 4/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.48	7.98						9.83								1.30
2	2.44	8.27						8.65								0.48
3																
4																
5	0.76	8.19						1.15								19.31
6	2.68	8.00						3.57								19.36
7	1.92	7.78						3.71								19.59
8	3.24	7.82						6.15								19.12
9	3.48	7.85						9.35								18.83
10	1.83	7.78						3.08								19.40
11																
12	2.15	8.24						8.30								1.82
13	2.70	7.95						11.82								19.18
14	2.50	7.97						5.07								19.15
15	2.57	8.04						5.82								19.49
16	1.60	8.02						5.48								1.18
17	1.22	7.74						2.28								19.43
18	6.14	7.66						15.83								19.10
19	1.87	7.69						3.22								19.13
20	3.09	7.80						6.05								19.63
21	0.81	7.96						1.80								20.16
22	0.68	7.95						1.20								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.28	7.87						1.79								19.36
35	1.44	7.73						2.14								19.82
51	3.71	7.85						17.24								19.65
52	3.65	7.99						18.28								19.47
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#117 5/11/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.48	8.13						9.53								1.36
2	2.44	8.20						8.28								0.44
3																
4																19.29
5	0.81	7.90						1.04								19.33
6	2.79	7.84						3.60								19.55
7	2.23	7.70						4.13								19.08
8	3.22	7.96						6.07								18.80
9	3.32	7.75						8.95								19.36
10	1.83	7.85						3.20								
11																1.82
12	2.16	7.97						8.59								19.16
13	2.86	7.96						12.82								19.05
14	2.50	7.84						5.31								19.46
15	2.61	8.09						6.16								1.14
16	1.59	7.99						5.38								19.41
17	1.20	7.67						2.14								19.01
18	6.19	7.69						16.52								18.87
19	1.93	7.65						3.44								19.60
20	3.05	7.87						6.10								20.18
21	0.83	8.34						1.78								
22	0.59	8.13						1.14								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																19.37
33	1.28	8.02						1.74								19.79
35	1.44	7.80						2.39								19.42
51	3.69	7.79						16.58								19.44
52	3.60	8.06						18.15								
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Appendix A (Continued).

WEEK#118 5/18/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.48	7.99						9.70								1.44
2	2.47	8.04						8.70								0.48
3																
4								1.10								19.34
5	0.71	7.83						3.44								19.38
6	1.99	7.84						2.73								19.61
7	1.50	7.93						3.97								18.86
8	2.16	7.89						8.66								18.88
9	2.94	7.86						2.42								19.41
10	1.75	7.89						1.93								19.30
11	1.16	7.85						8.10								1.88
12	2.24	7.85						12.61								19.18
13	2.88	7.89						5.00								19.16
14	2.53	7.83						5.84								19.50
15	2.61	8.35						5.28								1.18
16	1.59	7.95						1.83								19.42
17	1.13	7.80						10.89								19.09
18	6.43	7.84						3.00								19.14
19	1.80	7.95						5.65								19.64
20	2.98	8.26						1.76								19.84
21	0.81	8.14						1.13								
22	0.61	8.10						2.44								19.08
23	1.36	8.29						1.97								19.57
24	1.40	8.29														
25																
26																
27																
28																
29																
30																
31								1.93								19.38
32								7.38								19.82
33	1.31	8.30						17.10								19.48
35	2.70	8.28						17.60								19.48
51	3.78	7.93														
52	3.62	8.00														
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Appendix A (Continued).

WEEK#119 5/25/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.68	8.58	16.42	8.93	3.70	0.26	29.31	11.52		4.86	13.74	30.12	0.50	0.67	1976.	1.42
2	2.60	8.83	14.50	10.27	3.64	0.23	28.64	10.01		5.82	13.22	29.05	0.07	0.34	1937.	0.44
3																
4																
5	0.77	8.55	3.14	3.58	1.12	0.24	8.08	1.28		5.28	1.48	8.04	0.02	0.33	606.	19.33
6	2.54	8.49	10.72	14.33	5.51	0.34	30.90	3.83		7.76	19.57	31.16	0.08	0.48	2163.	19.37
7	2.20	8.51	10.77	11.00	3.18	0.25	25.20	4.30		9.22	11.56	25.08		0.48	1787.	19.57
8	3.46	8.71	24.27	12.76	6.11	0.31	43.45	6.83		9.90	27.48	44.21		0.59	3066.	18.82
9	3.32	8.55	19.13	13.18	5.44	0.30	38.05	11.54		6.94	20.09	38.57		0.54	2579.	18.83
10	1.90	8.57	10.56	7.84	2.55	0.14	21.09	3.46		7.24	9.33	20.03		0.37	1449.	19.37
11	1.19	8.60	5.23	6.10	1.35	0.11	12.79	2.21		5.46	5.77	13.44	6.22	0.43	952.	19.25
12	2.37	8.79	12.77	8.40	3.08	0.19	24.44	9.27		4.78	11.45	25.50	0.78	0.36	1677.	1.89
13	3.04	8.60	17.99	9.35	3.93	0.29	31.56	13.88		3.46	15.46	32.80	2.78	0.23	2106.	19.17
14	2.60	8.48	12.36	13.06	3.37	0.10	28.89	5.46		5.78	16.55	27.79		0.45	1932.	19.08
15	2.74	8.64	15.45	11.79	4.50	0.15	31.89	6.58		8.50	17.70	32.78	0.12	0.81	2254.	19.50
16	1.52	8.76	9.50	5.03	1.80	0.15	16.48	5.14		4.44	6.35	15.93	0.56	0.21	1105.	1.16
17	1.13	8.46	5.33	4.91	1.36	0.14	11.74	2.02		4.98	5.00	12.00	3.35	0.22	859.	19.40
18	6.78	8.17	39.22	31.58	14.24	0.94	85.98	19.66		14.88	50.17	84.71	0.16	1.13	5759.	19.02
19	1.77	8.35	8.97	8.32	2.49	0.17	19.95	3.18		8.78	8.95	20.91		0.32	1488.	19.12
20	3.19	8.50	17.05	13.84	5.40	0.17	36.46	6.40		12.80	19.00	38.20		0.43	2662.	19.77
21	0.80	8.54	4.13	2.74	0.95	0.27	8.09	1.84		2.61	3.85	8.30		0.13	581.	20.13
22	0.72	8.57	3.58	2.70	0.85	0.13	7.26	1.53		3.08	2.85	7.46	0.63	0.20	531.	
23	1.39	8.42	6.04	6.86	1.82	0.09	14.81	2.86		3.82	7.99	14.67	18.08	0.10	1020.	18.78
24	1.44	8.49	7.77	6.38	1.55	0.08	15.78	2.21		7.14	7.04	16.39	2.10	0.11	1181.	19.54
25	2.79	8.34	17.99	7.57	3.28	0.21	29.05	12.56		3.20	14.05	29.81	1.12	0.17	1929.	20.56
26	5.64	8.32	51.73	6.93	5.46	0.37	64.49	10.72		7.08	48.18	65.98	0.07	0.75	4535.	19.66
27																
28	3.07	8.54	18.56	8.64	3.77	0.22	31.19	13.37		4.04	14.99	32.40		0.31	2095.	19.82
29	2.92	8.33	17.42	10.54	4.00	0.41	32.37	9.55		4.12	17.70	31.37		0.22	2116.	19.61
30	4.27	8.39	30.61	13.78	6.64	0.39	51.42	9.65		10.76	32.90	53.31		1.00	3655.	18.78
31	6.39	8.51	45.93	11.64	8.75	0.78	67.10	41.78		16.58	11.76	70.12		0.59	4483.	
32																18.70
33	1.40	8.56	6.70	5.95	2.40	0.22	15.27	2.27		7.68	5.91	15.86	3.13	0.16	1144.	19.35
35	1.91	8.45	9.04	8.79	3.05	0.21	21.09	4.15		7.42	10.74	22.31		0.42	1545.	19.79
51	3.93	8.65	24.64	13.48	5.56	0.37	44.05	18.47		5.18	20.62	44.47		0.65	2889.	19.43
52	3.95	8.67	26.63	10.06	4.85	0.38	41.92	20.89		2.18	17.28	40.35		0.48	2591.	19.45
53	3.00	8.62	18.55	8.10	2.77	0.24	29.66	16.23		2.10	12.49	30.82	0.03	0.29	1935.	
54																
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Appendix A (Continued).

WEEK#120 6/ 1/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.77	8.15						10.86								1.46
2	2.67	8.38						9.60								0.40
3	2.64	7.80						4.49								18.88
4	2.46	8.22						6.04								19.31
5	0.94	7.96						1.87								19.34
6	2.73	7.87						3.81								19.34
7	2.20	7.90						3.99								19.59
8	3.51	7.91						6.70								19.11
9	3.58	7.92						10.80								18.81
10	1.92	7.89						3.38								19.34
11	1.26	8.01						2.12								19.22
12	2.44	8.13						9.12								1.96
13																
14	2.55	7.91						4.67								19.54
15	2.63	8.13						6.13								1.24
16	1.63	8.18						5.46								19.40
17	1.79	7.89						3.65								19.09
18	6.52	7.84						17.20								19.08
19	1.78	7.83						3.01								19.59
20	3.16	7.74						6.07								20.17
21	0.83	8.42						1.77								
22	0.84	8.01						1.75								19.01
23	1.50	7.83						2.81								
24																
25																
26																
27																
28																
29																
30																19.35
31																19.81
32								2.13								19.43
33	1.45	8.02						3.29								19.44
35	1.79	7.90						18.42								
51	3.86	8.08						19.35								
52	3.85	8.22														
53																
54																
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56																
57																
58																
59																
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Appendix A (Continued).

WEEK#121 6/ 8/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.96	8.01						11.83								1.36
2	2.81	8.04						11.54								0.42
3	2.77	7.56						4.50								18.89
4	2.65	7.71						5.99								19.33
5	1.00	7.77						1.40								19.39
6	3.23	7.71						4.24								19.41
7	2.39	7.65						4.36								19.64
8	3.73	7.62						6.99								19.16
9	3.64	7.83						6.42								18.87
10	1.97	7.66						3.13								19.14
11	2.44	8.00						2.39								19.38
12	1.33	7.93						9.48								1.84
13	3.19	7.96						13.78								19.20
14	2.96	7.96						6.90								19.10
15	3.07	8.14						7.90								19.59
16	1.91	7.78						5.65								1.24
17	1.08	7.75						1.65								19.42
18	6.43	7.72						16.26								19.05
19	1.90	7.82						2.90								19.18
20	2.93	7.77						5.26								19.66
21	1.18	8.45						3.11								20.18
22	0.88	8.17						1.60								
23	1.49	8.12						2.43								19.17
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.66	8.27						2.52								19.40
35	1.87	8.15						3.11								19.84
51	4.09	7.81						17.77								19.49
52	4.25	7.98						22.36								19.50
53																
54																
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58																
59																
60																

Appendix A (Continued).

WEEK#122 6/15/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.63	8.53						10.33								1.41
2	2.61	8.49						8.86								0.72
3	3.04	8.46						3.97								19.05
4	2.35	8.48						4.69								19.41
5	0.83	8.47						1.62								19.65
6	2.26	8.37						3.14								19.76
7																
8	2.36	8.54						3.72								19.53
9	2.59	8.64						7.20								19.12
10	1.62	8.67						2.27								19.65
11	1.24	8.63						1.83								19.33
12	2.27	8.63						13.29								1.86
13	2.93	8.46						13.60								19.18
14	2.68	8.21						1.64								19.47
15	2.49	8.60						5.58								19.70
16	1.72	8.59						6.43								1.30
17	1.14	8.20						1.97								19.42
18	6.00	8.20						16.88								19.09
19	1.68	8.49						2.49								19.40
20	2.84	8.51						4.61								19.76
21	0.79	8.46						1.32								20.15
22	0.62	8.41						0.93								
23	1.36	8.48						1.96								19.09
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.49	8.61						1.88								19.44
35	1.53	8.62						2.16								19.88
51	3.86	8.52						21.23								19.74
52	3.67	8.33						19.69								19.73
53																
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58																
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Appendix A (Continued).

WEEK#123 6/22/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.73	8.11	16.90	8.58	3.65	0.27	29.40	11.37		4.74	14.68	30.79	0.01	0.02	2013.	1.20
2	2.68	8.30	15.25	9.81	3.67	0.27	29.00	10.01		5.68	12.49	28.18	0.02	0.02	1904.	0.40
3	3.31	8.26	21.79	10.86	5.37	0.04	38.06	5.25		9.00	24.15	38.40	2.76	0.01	2681.	18.90
4	1.85	8.27	10.66	5.87	2.69	0.23	20.45	3.06		7.08	11.02	21.16	1.44	0.01	1494.	19.31
5	0.83	8.13	3.54	3.84	1.13	0.40	8.91	1.22		5.62	2.10	8.94	0.13	0.77	675.	19.34
6	2.21	7.99	8.69	11.97	4.13	0.47	25.26	3.06		6.76	15.20	25.02	0.06	0.04	1759.	19.40
7	2.79	8.06	11.87	14.68	4.90	0.30	31.75	6.84		8.50	16.97	32.31	0.16	0.06	2215.	19.62
8	2.89	8.04	17.71	12.56	4.54	0.34	35.15	5.32		8.30	20.82	34.44	2.52	0.01	2422.	19.16
9	3.33	8.09	20.00	12.10	5.09	0.04	37.23	10.08		7.06	20.40	37.54	0.73	0.01	2534.	18.83
10	1.84	8.07	9.43	7.70	2.43	0.17	19.73	2.53		9.70	8.36	20.59	0.07	0.01	1490.	19.47
11	1.73	8.30	5.49	6.28	1.41	0.13	13.31	1.82		5.24	5.83	12.89	11.32	0.07	939.	19.38
12	2.33	8.22	12.87	7.66	3.00	0.23	23.76	8.37		4.68	10.82	23.87	1.34	0.03	1597.	1.96
13	3.01	8.19	18.55	8.84	3.88	0.29	31.56	12.55		3.76	14.31	30.62	4.55	0.03	2024.	19.21
14	2.62	8.16	13.19	14.33	3.10	0.08	30.70	4.74		10.32	16.65	31.71	0.07	0.03	2229.	19.09
15	2.73	8.30	15.65	11.64	4.29	0.18	31.76	5.49		8.32	17.75	31.56	0.06	0.03	2207.	19.53
16	1.69	8.24	9.43	5.26	1.94	0.18	16.81	5.00		4.66	6.74	16.40	0.55	0.03	1138.	1.34
17	3.10	8.01	5.76	6.57	1.70	0.19	14.22	2.40		6.26	6.16	14.82	4.10	0.04	1055.	19.47
18	5.67	7.78	36.74	24.46	10.70	0.92	72.82	14.43		9.60	49.96	73.99	0.70	0.01	4998.	19.05
19	1.75	8.05	8.10	8.28	2.44	0.19	19.01	2.62		7.76	9.37	19.75	0.04	0.01	1406.	19.18
20	3.02	8.24	18.36	12.49	4.66	0.19	35.70	5.51		11.20	19.57	36.28	0.13	0.01	2555.	19.69
21	0.78	8.13	4.26	2.20	1.00	0.20	7.66	1.34		2.56	3.58	7.48	0.08	0.01	536.	20.06
22	0.57	8.10	3.02	2.17	0.64	0.11	5.94	0.80		3.53	1.87	6.20	0.48	0.07	459.	
23	1.43	7.89	6.32	6.97	1.76	0.09	15.14	2.03		6.50	6.95	15.48	31.25	0.03	1112.	19.11
24																
25	2.88	7.96	18.55	7.35	3.11	0.25	29.26	12.21		3.20	13.74	29.15	0.23	0.02	1909.	20.51
26	5.87	7.96	53.30	4.84	5.15	0.41	63.70	10.47		5.80	46.53	62.70	0.09	0.01	4361.	19.64
27																
28	3.75	8.05	21.20	8.06	3.50	0.76	33.02	13.33		3.84	16.24	33.41	1.61	0.01	2208.	20.04
29	2.74	8.10	16.18	9.03	3.41	0.41	29.03	9.33		4.88	15.61	29.82	0.58	0.01	1989.	19.82
30	1.95	7.96	7.57	10.70	3.18	0.23	21.68	2.14		8.05	12.49	22.68	0.22	0.02	1604.	18.70
31	6.47	8.25	43.97	12.26	7.98	0.89	65.10	42.47		15.92	10.41	68.80	0.17	0.02	4365.	
32																18.63
33	2.39	8.13	13.63	9.02	2.90	0.22	25.27	4.59		7.92	12.41	24.92	1.20	0.03	1780.	19.31
35	1.50	8.26	7.13	6.64	2.12	0.22	16.11	2.14		7.68	6.49	16.31	0.05	0.02	1188.	19.51
51	4.15	8.28	25.36	13.61	5.42	0.41	44.80	22.03		4.10	18.74	44.87	0.10	0.01	2869.	19.49
52	4.12	8.30	29.52	10.01	5.00	0.44	44.97	22.59		3.66	16.65	42.90	0.05	0.75	2781.	19.51
53	3.97	8.26	24.34	11.90	4.52	0.37	41.13	24.31		2.10	14.57	40.98	0.05	0.03	2557.	
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Appendix A (Continued).

WEEK#124 6/29/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.58	8.48						10.76								1.28
2	2.52	8.52						9.36								0.49
3	3.14	8.46						5.11								18.93
4	2.54	8.47						6.58								19.33
5	0.61	8.41						1.56								19.46
6	2.26	8.26						2.78								19.55
7	2.30	8.35						5.27								19.79
8	3.20	8.44						5.96								19.30
9	3.23	8.52						9.44								18.94
10	1.43	8.38						2.20								19.62
11	1.22	8.59						1.95								19.55
12	2.19	8.51						8.62								2.05
13	2.82	8.29						12.81								19.27
14	2.56	8.40						4.80								19.18
15	2.77	8.52						6.81								19.60
16	1.47	8.52						4.46								2.00
17	1.29	8.54						2.28								19.67
18	4.65	8.30						12.58								19.19
19	0.92	8.39						1.33								19.36
20	1.38	8.32						2.29								19.87
21	0.73	8.36						1.32								20.06
22	0.50	8.30						0.73								
23	1.37	8.52						2.46								19.27
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	0.63	8.34						0.91								19.35
35	1.40	8.53						2.08								19.99
51	3.81	8.48						20.51								19.66
52	3.99	8.54						22.03								19.68
53																
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Appendix A (Continued).

WEEK#125 7/ 6/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.62	8.54						10.73								1.22
2	2.61	8.64						9.24								0.42
3	3.14	8.64						5.71								18.88
4	2.66	8.68						6.64								19.26
5	0.71	8.58						0.88								19.40
6	2.23	8.45						2.91								19.41
7	2.55	8.39						6.16								19.64
8	2.30	8.54						5.80								19.17
9	3.44	8.57						10.21								18.84
10	1.80	8.47						2.76								19.51
11	1.25	8.52						1.99								19.41
12	2.35	8.58						9.80								2.06
13	2.78	8.43						12.11								19.26
14	2.56	8.37						4.88								19.10
15	2.84	8.55						5.90								19.52
16	1.42	8.60						4.26								2.08
17	2.23	8.45						2.91								19.58
18	4.44	8.42						11.71								19.25
19	1.64	8.57						2.91								19.23
20	1.53	8.33						2.68								20.01
21	0.82	8.42						1.48								20.01
22	0.56	8.35						0.96								
23	1.42	8.54						2.21								19.18
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	0.66	8.46						0.90								19.29
35	1.45	8.46						2.31								19.84
51	3.82	8.68						20.31								19.53
52	4.09	8.55						23.74								19.54
53																
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Appendix A (Continued).

WEEK#126 7/13/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.64	8.42						10.10								1.28
2	2.30	8.17						7.59								0.64
3	3.30	8.30						4.22								18.99
4	2.72	8.39						6.17								19.52
5	0.82	8.13						0.83								19.40
6	2.36	7.98						2.91								19.41
7	2.57	8.01						4.97								19.63
8	3.11	8.25						5.54								19.17
9	3.60	8.22						9.49								18.89
10	1.70	8.05						2.28								19.44
11	1.27	8.32						1.93								19.62
12	2.22	8.25						7.83								2.24
13	2.91	8.13						11.71								19.33
14	2.64	8.13						4.36								19.15
15	2.78	7.98						6.36								19.58
16	1.34	8.23						3.21								2.34
17	1.19	8.40						1.84								19.62
18	3.29	7.93						6.98								19.33
19	1.77	8.46						3.06								19.17
20	2.39	8.55						4.20								19.66
21	0.79	8.38						1.36								20.07
22	0.52	8.47						0.52								
23	1.45	8.56						2.58								19.25
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.02	8.50						0.70								19.38
35	1.41	8.60						1.20								19.86
51	4.05	7.99						18.13								19.49
52	4.17	8.09						21.47								19.51
53																
54	1.11	7.77						1.65								
55																
56																
57																
58																
59																
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Appendix A (Continued).

WEEK#127 7/20/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.65	8.40	16.96	6.86	3.68	0.21	27.71	10.41	0.60	4.44	12.65	28.10	1.50	0.03	1846.	1.39
2	2.55	8.43	16.10	7.12	3.58	0.20	27.00	9.81	0.32	5.04	13.22	28.39	0.08		1864.	0.49
3	3.01	8.15	20.17	10.10	5.77	0.26	36.30	4.22		9.80	21.97	35.99	0.04	0.03	2549.	18.91
4	2.63	8.28	16.16	9.06	3.54	0.16	28.92	6.47		8.10	15.61	30.18	0.76	0.03	2076.	19.34
5	0.62	7.83	2.76	2.75	0.81	0.29	6.61	0.82		4.30	1.46	6.58	0.34	0.66	501.	19.49
6	2.29	8.09	9.21	14.73	4.66	0.31	28.71	2.78		7.18	19.05	29.01	0.04	0.10	2027.	19.59
7	2.74	8.04	12.39	14.40	4.75	0.26	31.80	1.99		8.40	16.32	32.11	0.27	0.05	2008.	19.84
8	3.34	8.04	18.56	16.63	5.57	0.26	41.02	5.94		10.04	26.34	42.32	4.80	0.03	2926.	19.33
9	3.48	8.03	20.64	13.09	5.93	0.25	39.91	9.63		8.24	21.15	39.02	0.35	0.03	2879.	18.94
10	2.03	7.96	11.44	9.70	3.38	0.07	24.59	3.10		11.05	10.08	24.23	0.28	0.12	1769.	19.67
11	1.25	7.96	5.75	6.14	1.46	0.10	14.05	1.96		5.96	5.91	13.83	10.00	0.19	994.	19.54
12	2.15	8.43	13.05	7.46	2.80	0.17	23.48	8.59	0.44	4.52	10.31	23.86	1.30	0.04	1579.	2.20
13	2.61	8.07	15.59	8.22	3.50	0.19	27.50	9.94		5.08	11.99	27.01	5.40	0.05	1811.	19.32
14	2.61	8.23	14.75	14.59	2.99	0.10	32.43	4.23		11.00	16.97	32.30	0.20	0.04	2308.	19.19
15	2.77	8.09	16.02	11.14	4.82	0.16	32.14	6.70		8.90	17.80	33.40	0.25	0.05	2292.	19.65
16	1.18	8.35	7.06	4.27	1.51	0.12	12.96	3.03		4.98	4.96	12.97	0.20	0.03	920.	2.24
17	0.97	8.23	5.03	4.40	1.20	0.11	10.74	1.27		6.10	3.75	11.12	1.80	0.17	820.	19.72
18	4.07	8.06	23.63	15.78	7.95	0.76	48.12	9.79		9.22	30.83	50.84	0.93	0.03	3376.	19.40
19	1.82	7.85	9.03	9.28	2.73	0.16	21.20	3.26		8.40	10.20	21.86	0.64	0.11	1551.	19.37
20	2.60	8.20	15.17	9.77	4.32	0.22	29.48	5.09		9.40	16.14	30.63	0.09	0.03	2135.	19.87
21																20.03
22	0.53	8.15	2.65	2.14	0.63	0.12	5.54	0.84		2.64	1.98	5.46	0.79	0.15	402.	
23	1.40	8.12	6.46	7.30	1.85	0.07	15.68	2.43		5.24	7.29	14.96	36.00	0.05	1076.	19.25
24																
25	2.83	8.22	19.18	7.96	3.42	0.20	30.76	11.96		3.20	14.16	29.32	0.85	0.03	1949.	20.95
26	5.69	8.51	56.23	8.77	5.53	0.31	68.84	10.35	0.56	5.54	51.63	68.08	0.07	0.04	4709.	19.58
27																
28	2.89	8.30	19.97	7.32	3.08	0.18	30.55	11.71		3.33	15.30	30.34	2.45	0.02	2003.	20.01
29	2.60	8.35	16.22	8.74	3.40	0.36	28.72	9.35	0.52	3.36	14.57	27.80	3.20	0.02	1855.	19.54
30	7.58	7.99	64.61	20.07	11.90	0.63	91.21	27.06		9.76	58.19	95.01	0.02	0.02	6406.	18.78
31	6.40	8.05	33.10	22.80	18.10	0.74	74.74	42.68		13.94	14.57	71.17	0.05	0.03	4530.	
32																18.97
33	1.38	8.39	8.97	4.63	1.94	0.20	15.74	1.76	0.60	8.40	5.04	15.80	0.20	0.06	1165.	19.31
35	1.42	8.29	7.26	5.99	2.19	0.13	15.57	2.11		7.98	6.25	16.32	0.04	0.04	1181.	19.99
51	3.89	8.23	24.66	11.92	6.48	0.38	43.44	19.72		5.02	18.74	43.48	0.13	0.03	2805.	19.71
52	4.10	8.39	28.94	10.55	5.38	0.40	45.27	26.10	0.24	3.44	17.70	47.48	0.16	0.07	2950.	19.73
53	3.89	8.29	23.69	13.16	4.87	0.28	42.00	24.15		2.44	15.61	42.20	0.15	0.04	2633.	
54	1.55	8.24	11.69	2.47	1.35	0.14	15.65	8.27		2.61	4.04	14.92	0.02	0.06	987.	
55																
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Appendix A (Continued).

WEEK#128 7/27/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.78	8.24						10.66								1.26
2	2.60	8.17						8.79								0.40
3	2.84	8.13						4.75								18.83
4	2.52	8.17						6.07								19.24
5	0.77	8.05						1.04								19.35
6	2.29	7.82						2.79								19.40
7	3.03	7.79						6.46								19.62
8	3.95	7.86						6.83								19.16
9	3.55	7.92						11.78								18.83
10	1.90	7.85						2.79								19.48
11	1.35	7.94						2.20								19.59
12	2.08	8.51						7.31								2.08
13	2.48	8.00						7.20								19.36
14	2.40	8.00						3.98								19.08
15	2.86	8.11						6.92								19.48
16	1.27	8.11						3.16								2.70
17	1.06	7.86						1.35								19.33
18	6.00	7.73						15.18								19.43
19	1.85	7.63						3.11								19.19
20	2.75	7.82						4.93								19.38
21	0.70	8.21						1.16								20.00
22	0.61	7.99						1.78								
23	1.45	8.09						2.30								19.14
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.46	7.95						1.79								19.25
35	1.53	7.94						2.21								19.82
51	3.82	8.01						17.31								19.50
52	4.19	7.88						22.49								19.51
53																
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Appendix A (Continued).

WEEK#129 8/ 3/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	10.50	7.95						9.98								1.44
2	2.92	8.13						8.71								0.50
3	3.24	8.57						4.83								18.88
4	2.87	8.19						6.06								19.31
5	0.82	8.17						0.99								19.48
6	2.65	7.91						3.04								19.55
7	3.06	7.88						5.88								19.76
8	3.72	7.92						5.57								19.31
9	4.23	8.02						7.88								18.94
10	2.58	7.95						3.54								19.68
11	1.48	8.34						1.77								19.55
12	2.35	8.16						7.33								2.08
13	2.55	8.05						7.49								19.44
14	2.80	8.15						4.05								19.18
15	2.91	8.16						5.56								19.62
16	1.37	8.27						2.78								2.72
17	1.33	7.87						1.59								19.73
18	3.31	7.99						6.24								19.49
19	2.46	7.84						4.18								19.40
20	3.33	7.91						5.86								19.84
21	0.82	8.27						1.27								19.98
22	0.95	8.09						1.98								
23	1.64	8.31						2.29								19.29
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.72	8.08						1.94								19.31
35	2.48	8.04						9.69								19.93
51	4.34	8.57						17.88								19.66
52	4.66	8.61						21.24								19.67
53																
54																
55																
56																
57																
58																
59																
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Appendix A (Continued).

WEEK#130 8/10/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.88	7.73						12.40								1.44
2	2.64	7.80						12.98								0.36
3	3.03	8.16						4.81								18.52
4	2.58	7.96						6.91								19.17
5	0.63	7.81						0.58								19.28
6	2.52	7.61						2.40								19.39
7	2.64	7.65						5.80								19.57
8	3.49	7.63						6.79								19.18
9	3.74	7.81						8.99								18.90
10	1.91	7.72						2.60								19.50
11	1.32	7.83						1.70								19.37
12	2.11	7.74						8.93								4.92
13	2.12	7.82						7.15								19.29
14	2.54	7.98						4.90								18.76
15	2.84	8.04						7.87								19.46
16	1.41	7.84						5.09								2.83
17	1.10	7.79						1.40								19.62
18	2.71	7.53						7.70								
19	1.95	7.59						4.30								19.24
20	2.80	7.76						4.39								19.66
21	0.71	7.68						3.38								19.71
22	0.65	7.93						1.07								
23	1.48	7.70						1.35								19.17
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.46	7.87						0.71								
35	1.10	7.79						5.44								19.14
51	2.68	8.00						17.28								19.69
52	4.05	7.82						22.81								19.49
53																19.50
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WELL#131 8/17/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.69	8.45	16.39	9.51	3.96	0.27	30.13	10.51		4.84	13.48	28.83	2.40	0.05	1941.	1.38
2	2.64	8.44	14.94	10.39	3.95	0.25	29.53	9.70		5.54	13.22	28.46	0.05		1926.	
3	2.53	8.58	16.75	8.26	4.60	0.31	29.92	3.13		9.04	17.02	29.19	0.05	0.03	2099.	18.86
4																
5	0.80	8.45	2.65	4.28	1.27	0.27	8.47	0.71		6.88	0.73	8.32	0.15	0.35	653.	19.28
6	2.77	8.24	10.70	17.57	6.83	0.45	35.55	2.74		8.08	26.85	37.67	0.10	0.03	2578.	19.35
7	2.53	8.26	12.56	14.41	4.16	0.23	31.36	4.71		9.86	17.49	32.06	0.05	0.02	2246.	19.52
8	3.68	8.13	20.94	19.33	7.04	0.35	47.66	7.18		9.98	30.55	47.71	0.20	0.02	3299.	19.15
9	3.39	8.17	21.40	14.54	6.01	0.36	42.31	10.77		7.50	24.15	42.42	0.10	0.02	2870.	18.85
10	1.78	8.28	10.49	7.65	2.70	0.09	20.93	2.17		9.52	8.87	20.56	0.60	0.03	1515.	19.49
11	1.23	8.32	5.83	6.79	1.52	0.10	14.25	1.43		5.76	5.75	12.94	39.25	0.10	971.	19.44
12	2.12	8.31	11.96	7.65	2.89	0.19	22.69	8.01		4.84	10.70	23.55	0.46	0.06	1564.	2.90
13	1.85	8.23	10.48	7.94	2.99	0.16	21.58	4.30		6.92	9.26	20.48	3.10	0.04	1462.	19.51
14	1.98	7.96	11.96	8.59	1.82	0.09	22.46	2.83		9.72	9.84	22.39	1.85	0.02	1639.	19.05
15	2.69	8.21	14.70	13.06	5.29	0.17	33.22	5.30		7.98	18.48	31.76	0.65	0.04	2234.	19.44
16	1.47	8.52	8.45	5.04	1.89	0.14	15.52	4.03		5.00	6.25	15.28		0.03	1072.	2.98
17	1.23	8.19	5.88	6.21	1.73	0.14	13.96	1.30		7.09	4.89	13.28	1.75	0.05	1000.	19.64
18	4.85	7.99	29.39	22.82	12.12	0.72	65.05	11.77		11.58	41.22	64.57	0.10	0.02	4412.	19.47
19	1.98	7.69	9.63	9.93	3.15	0.18	22.89	2.97		8.24	11.99	23.20	0.07	0.03	1650.	19.26
20	2.72	8.15	16.39	12.11	4.51	0.22	33.24	4.37		10.98	17.59	32.94	0.10	0.02	2353.	19.61
21	0.61	8.33	3.99	1.24	0.57	0.14	5.94	0.76		1.80	2.89	5.45	0.05	0.04	405.	19.62
22	0.72	8.19	3.38	3.22	0.99	0.12	7.71	0.54		3.04	4.37	7.95	1.95	0.18	573.	
23	1.98	8.33	7.39	11.91	3.47	0.11	22.88	1.17		7.90	12.16	21.23	83.00	0.06	1563.	19.23
24																
25	2.81	8.17	17.61	8.00	3.46	0.23	29.30	12.11		3.22	14.16	29.49	1.03	0.02	1922.	20.44
26	5.43	8.37	57.61	6.50	5.27	0.37	69.75	8.27		5.88	48.09	62.24	0.10	1.46	4495.	19.76
27																
28	2.84	8.39	19.22	7.38	3.25	0.21	30.06	12.32		3.32	15.04	30.68	2.28	0.04	1999.	19.94
29	2.61	8.24	15.30	8.38	3.43	0.38	27.49	9.57		3.68	14.16	27.41	3.05	0.02	1820.	19.53
30	3.87	8.17	28.67	13.06	7.19	0.45	49.37	2.63		7.86	38.10	48.59	0.05	0.03	3429.	18.75
31	6.31	8.08	44.02	20.20	9.17	0.72	74.11	46.83		11.10	18.53	76.46	0.20	0.10	4784.	
32																18.90
33	1.54	7.97	9.96	5.23	2.12	0.23	17.54	3.08		8.08	6.58	17.74		0.02	1287.	19.19
35	0.75	8.26	3.27	3.22	1.04	0.15	7.68	0.65		3.16	3.75	7.56	1.60	0.04	554.	19.83
51	3.72	8.46	23.25	14.53	6.71	0.39	44.88	18.44		6.22	19.88	44.54	0.20	0.02	2911.	19.45
52	4.04	8.33	27.48	11.53	5.56	0.41	44.98	26.11		3.52	17.49	47.12	0.10	0.04	2927.	19.46
53	3.78	8.40	24.02	13.51	5.36	0.34	43.24	20.00		2.76	16.19	44.95	0.06	0.03	2769.	
54	1.94	8.29	13.38	3.93	2.18	0.18	19.67	9.78		2.84	6.51	19.13	0.12	0.02	1253.	
55																
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Appendix A (Continued).

WEEK#132 8/24/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.90	8.37						13.74								1.26
2	2.67	8.03						9.80								0.29
3	2.33	8.16						3.72								18.77
4	1.57	8.56						3.31								19.15
5	1.12	7.93						0.95								19.29
6	3.08	8.09						4.26								19.33
7	2.49	8.26						7.13								19.54
8	3.96	8.10						7.66								19.10
9	3.44	8.29						6.60								18.80
10	1.95	8.51						3.77								19.42
11	1.38	8.49						1.89								19.34
12	2.24	8.46						11.68								1.70
13	2.31	8.47						7.43								19.27
14	1.84	8.41						2.62								19.03
15	3.30	8.10						10.49								19.47
16	1.58	7.73						5.96								2.88
17	1.10	8.60						1.67								19.56
18	6.38	8.18						18.36								19.45
19	2.32	8.41						5.52								19.15
20	2.49	8.44						6.15								19.58
21	0.65	8.33						1.04								19.58
22	0.78	8.57						1.16								
23	1.78	8.49						1.68								19.12
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.51	8.41						2.34								19.09
35	1.40	8.51						2.61								19.64
51	3.85	8.22						17.31								19.43
52	4.03	8.05						26.34								19.44
53																
54																
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Appendix A (Continued).

WEEK#133 8/31/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.69	8.17						11.82								1.32
2	2.39	7.82						11.92								0.36
3	2.26	8.21						3.81								18.74
4	2.39	8.21						5.93								19.14
5	0.85	7.94						1.01								19.31
6	1.99	8.06						1.99								19.37
7	2.36	8.04						5.53								19.51
8	2.16	7.92						4.20								19.22
9	3.99	8.09						7.82								18.90
10	1.53	8.17						1.60								19.50
11	1.30	8.03						1.56								19.36
12	1.75	8.10						5.87								1.91
13	2.04	8.28						4.37								19.29
14	1.79	8.27						2.37								19.08
15	3.15	7.98						8.53								19.11
16																
17																
18	6.40	7.63						23.08								19.51
19	2.64	8.08						6.35								19.33
20	2.43	8.06						5.22								19.58
21	0.74	7.50						1.63								19.48
22	1.12	7.90						2.23								
23	1.48	8.13						1.42								19.45
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.46	8.17						2.32								19.02
35	1.39	8.22						2.94								19.38
51	3.31	8.09						11.36								19.46
52	3.94	8.10						26.49								19.46
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Appendix A (Continued).

WEEK#134 9/ 7/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.63	7.93						10.50								1.62
2	2.57	7.82						8.46								0.48
3	2.38	8.11						4.12								18.71
4	2.36	7.96						4.64								19.15
5	0.96	7.80						1.23								19.26
6	2.25	7.65						2.57								19.36
7	2.08	7.75						4.92								19.58
8	3.52	7.58						7.58								19.11
9	3.80	7.57						7.97								18.83
10	2.06	7.82						3.01								19.47
11	1.28	8.13						1.50								19.37
12	2.07	8.16						8.53								2.30
13	2.36	7.98						6.61								19.33
14	1.75	7.88						2.28								19.00
15	3.33	8.04						9.42								19.47
16	1.55	7.97						3.96								2.16
17	1.39	7.69						2.88								19.60
18	6.48	7.33						22.63								19.49
19	2.78	7.77						7.73								19.16
20	2.37	7.91						4.04								19.67
21	0.65	7.68						1.14								19.43
22	0.81	8.12						0.98								
23	1.70	7.90						1.22								19.10
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.45	8.17						2.12								18.98
35	1.30	7.89						1.79								19.65
51	3.29	8.05						11.82								19.47
52	3.92	7.86						28.10								19.48
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Appendix A (Continued).

WEEK#135 9/14/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.97	8.20	18.21	10.72	4.43	0.25				4.84			1.15	0.02		1.16
2	2.63	8.22	14.88	11.30	3.97	0.23				5.62			0.10	0.07		0.26
3	2.55	8.43	16.22	12.06	5.28	0.28	33.84	4.22	0.68	8.14	20.16	33.20	0.05	0.28	2325.	18.76
4	2.31	8.41	16.14	9.33	2.87	0.19				8.82			0.45	0.23		19.08
5	0.76	8.22	3.39	3.85	1.09	0.27	8.60	1.23		4.38	2.69	8.30	2.00	0.69	619.	19.48
6	2.29	8.30	8.87	16.38	5.53	0.37	31.15	2.45		6.68	21.24	30.37	2.00	0.18	2128.	19.54
7	2.79	8.32	13.17	17.66	4.76	0.28				9.80			0.05	0.02		19.51
8	3.50	8.14	18.80	18.94	6.52	0.35				9.14			4.55	0.18		19.45
9	2.69	8.23	16.22	13.39	4.57	0.31	34.49	9.89		6.68	17.80	34.37	1.05	0.02	2322.	19.11
10	2.11	8.35	11.88	11.25	3.79	0.12				11.92			5.75	0.04		19.61
11	1.22	8.35	5.77	7.44	1.54	0.11			0.92	5.91			32.00	0.07		19.32
12	2.21	8.25	13.48	8.75	3.22	0.21				5.22			0.25	0.02		2.22
13	2.23	8.32	12.21	11.57	3.56	0.22				6.72			54.00	0.04		19.24
14	1.61	8.36	11.06	8.16	1.63	0.09				10.00			0.25	0.32		19.21
15	3.76	8.39	22.09	19.62	6.76	0.21			0.56	11.28			1.10	0.05		19.38
16	1.50	8.28	8.68	5.87	2.09	0.16				5.66			0.30	0.03		1.74
17	1.14	8.35	5.29	6.59	1.75	0.16				6.70			2.30	0.03		19.46
18	7.02	7.56	45.05	30.98	19.26	0.86	96.15	20.35		16.20	58.71	95.26	0.10	0.03	6454.	19.38
19	3.19	8.36	19.49	15.78	5.19	0.25				10.58			0.45	0.02		19.43
20	2.87	8.40	17.35	13.77	4.61	0.19				11.38			0.10	0.04		19.57
21	0.70	7.81	4.85	1.38	0.37	0.22				1.92			0.50	0.10		19.36
22	0.75	8.14	3.22	3.71	1.05	0.15				1.48			0.70	0.20		
23	1.71	8.34	7.53	10.57	2.56	0.09			0.64	7.66			93.33	0.03		19.09
24																
25	2.92	7.98	18.31	8.90	3.63	0.23				3.16			1.47	0.31		20.45
26	5.84	8.13	56.91	7.78	5.72	0.38	70.79	10.46		6.56	50.38	67.40	0.07	0.05	4739.	19.45
27																
28	3.19	8.02	20.92	9.85	3.99	0.23				3.80			0.10	0.10		19.99
29	2.66	8.14	16.33	9.17	3.49	0.38	29.37	12.70		3.30	13.85	29.85	4.85	0.06	1933.	19.56
30	2.63	8.28	17.03	20.13	10.24	0.33	47.73	19.95		5.86	22.49	48.30		0.02	3077.	18.73
31	6.41	7.68	45.05	15.04	8.63	0.71	72.43	49.82		8.22	19.15	77.19	10.00	0.03	4657.	
32																18.74
33	1.48	8.42	8.44	6.29	2.54	0.26				6.90				0.04		18.94
35	3.30	8.25	15.58	18.95	5.80	0.57				8.32				0.16		19.54
51	2.91	8.36	62.58	13.47	7.50	0.35			0.64	7.78	19.26		0.10	0.19	3232.	19.54
52	4.07	8.12	29.50	13.02	5.87	0.41	48.80	28.55		3.58	18.16	50.30	0.10	0.16	3129.	19.51
53	3.79	8.00	24.23	12.80	5.03	0.36	42.42	22.90		2.62	15.09	40.61	0.20	0.07	2585.	
54	1.95	8.09	13.83	4.86	2.60	0.19				3.00			0.02	0.19		
55																
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Appendix A (Continued).

WEEK#136 9/21/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.88	8.12						12.66								1.16
2	2.67	8.22						10.22								0.26
3	2.39	7.97						3.82								18.72
4	2.23	8.20						5.26								19.04
5	0.80	8.02						0.96								19.25
6	0.81	7.79						0.77								19.34
7	2.80	7.76						6.06								19.49
8	3.97	7.64						7.12								19.19
9	3.43	7.85						6.59								18.94
10	1.69	7.73						2.05								19.51
11	2.17	8.21						1.13								19.32
12	2.65	8.11						11.33								1.70
13	3.25	7.81						11.66								19.18
14	1.69	8.01						2.04								19.04
15	3.40	7.64						8.02								19.36
16	1.54	7.99						4.14								2.38
17	1.19	7.75						3.34								19.41
18	6.96	7.55						19.66								19.31
19	0.49	7.47						1.12								19.27
20	2.86	7.75						5.52								19.60
21	0.75	8.14						1.47								19.36
22	0.76	8.03						1.09								
23	1.49	7.92						1.50								19.10
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.53	7.91						1.90								18.95
35	3.43	7.74						3.36								19.55
51	2.59	7.60						6.06								19.46
52	3.90	7.92						27.32								19.44
53																
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Appendix A (Continued).

WEEK#137 9/28/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.92	8.10						14.49								0.98
2	2.59	8.14						10.40								0.20
3	2.50	8.11						4.87								18.65
4	2.14	8.34						5.80								16.98
5	0.84	7.92						0.87								19.14
6	2.12	7.86						3.19								19.21
7	2.45	7.70						5.61								19.37
8	3.78	7.59						7.35								19.01
9	4.77	7.76						11.07								18.71
10	1.98	7.96						3.46								19.29
11	1.27	8.38						1.66								19.19
12	2.85	8.37						15.29								1.58
13	2.69	8.18						8.44								19.15
14	1.71	8.04						2.33								18.92
15	3.42	7.77						9.00								19.28
16	1.66	8.18						5.49								2.70
17	1.15	7.84						1.81								19.45
18	6.72	7.55						20.55								19.41
19	2.46	7.29						8.77								19.06
20	2.81	8.03						5.80								19.44
21	0.74	7.83						1.61								19.31
22	0.78	7.78						1.02								
23	1.38	7.91						1.52								18.99
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.45	8.07						2.01								18.89
35	3.39	7.63						9.57								19.47
51	2.59	7.90						5.80								19.29
52	3.95	7.95						29.36								19.30
53																
54																
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56																
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Appendix A (Continued).

WEEK#138 10/ 5/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1																1.02
2																0.28
3																18.79
4																19.01
5																19.15
6																19.25
7																19.43
8																19.05
9																18.75
10																19.47
11																19.61
12																1.66
13																19.25
14																18.96
15																19.30
16																2.95
17																19.55
18																19.50
19																19.16
20																19.58
21																19.61
22																
23																19.32
24																
25																
26																
27																
28																
29																
30																
31																
32																
33																18.94
35																19.57
51																19.40
52																19.40
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#139 10/12/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.78	8.25	16.80	10.90	4.68	0.30	32.68	10.71		5.12	14.90	30.83	1.67	0.01	2081.	0.92
2	2.58	8.25	15.50	11.34	4.11	0.29	31.24	10.99		5.76	13.12	29.87	0.36		2016.	0.28
3	2.83	8.07	19.06	9.24	6.24	0.36	34.90	3.50		9.68	20.61	33.79	0.10	0.01	2418.	18.67
4	1.57	8.03	10.86	5.23	1.95	0.12	18.16	1.30		10.20	6.66	15.16	25.89	0.01	1371.	18.99
5	1.25	7.87	5.61	6.79	2.10	0.46	14.96	1.11		10.56	3.31	14.98	1.94	0.46	1151.	19.13
6	2.56	7.70	10.75	16.46	6.94	0.37	34.52	3.21		7.94	24.10	35.25	0.10	0.02	2432.	19.17
7	2.14	8.03	12.22	10.85	3.03	0.08	26.18	4.29		9.56	12.80	26.65	0.08	0.01	1888.	19.35
8	4.11	7.63	26.02	24.04	9.32	0.17	59.55	9.18		11.32	38.50	59.00	0.52	0.01	4065.	18.99
9	4.07	7.47	24.12	21.69	8.82	0.42	55.05	9.07		9.96	34.67	53.70	0.04	0.01	3707.	18.69
10	1.84	8.04	10.71	8.09	3.10	0.10	21.91	1.75		12.02	7.83	21.60	4.32	0.03	1620.	19.30
11	1.22	8.33	5.61	6.68	1.52	0.09	13.90	1.55	0.96	5.06	5.83	13.40	33.04	0.07	957.	19.28
12	2.63	8.18	13.55	10.75	4.28	0.31	28.89	9.95		4.75	13.12	27.82	1.71	0.02	1364.	1.52
13	2.29	8.25	14.86	9.19	3.10	0.24	27.39	9.71		6.63	11.62	27.96	10.01	0.01	1880.	19.19
14	1.33	7.98	8.58	5.60	1.20	0.08	15.46	1.50		7.99	6.45	15.94	0.10	0.01	1178.	18.92
15	3.42	7.91	14.86	21.77	8.53	0.20	45.36	9.68		9.92	24.41	44.01	0.42	0.01	3010.	19.57
16	1.47	8.17	9.40	5.23	2.02	0.17	16.82	4.41		6.19	6.12	16.72	0.06	0.01	1180.	3.02
17	1.08	7.96	4.54	5.67	1.65	0.12	11.98	1.40		7.07	3.82	12.29	0.70	0.01	907.	19.52
18	5.62	7.63	37.12	23.96	16.64	0.69	78.41	19.62		14.63	46.43	80.68	0.18	0.01	5381.	19.50
19	3.85	7.75	24.01	21.54	6.56	0.34	52.45	9.45		13.70	26.75	49.90	0.13	0.01	3532.	19.06
20	3.05	7.70	18.08	15.85	4.96	0.16	39.05	7.69		12.62	20.30	40.61	0.01	0.01	2817.	19.45
21	0.64	8.46	4.16	1.17	0.35	0.14	5.82	1.19	0.16	1.63	3.08	6.06	0.11	0.01	423.	19.33
22	0.68	8.21	2.97	3.02	0.91	0.12	7.02	0.68		3.61	2.73	7.02	1.68	0.25	520.	
23	1.50	8.17	7.00	7.97	2.17	0.08	17.22	1.46		8.68	6.33	16.47	114.8	0.02	1236.	19.07
24																
25	2.79	7.98	17.44	8.75	4.08	0.22	30.49	13.64		3.31	14.31	31.26	0.30	0.01	2007.	20.37
26	5.59	8.08	54.70	7.06	6.03	0.33	68.12	10.94		6.90	49.97	67.81	0.06	0.01	4694.	19.47
27																
28	3.20	8.11	22.02	8.82	3.90	0.20	34.94	14.94		4.16	16.76	35.89	4.14	0.01	2327.	19.90
29	2.59	8.10	16.15	7.72	3.36	0.28	27.51	9.92		3.83	14.16	27.91	2.07	0.01	1843.	19.42
30	2.18	7.43	9.86	10.30	5.17	0.22	25.55	1.92		4.98	19.78	26.68	0.01	0.01	1826.	18.66
31	6.03	7.50	44.70	16.47	9.98	0.73	71.88	45.11		8.61	20.82	74.54	0.17	0.01	4632.	
32																18.41
33	1.43	7.95	8.22	5.45	2.46	0.22	16.35	2.14		8.39	5.95	16.48	0.02	0.02	1210.	18.92
35	3.27	8.00	17.76	15.93	5.77	0.38	39.84	10.07		10.88	20.45	41.40	0.02	0.01	2816.	19.46
51	2.49	8.11	12.01	11.19	6.67	0.33	30.20	3.96		10.08	16.24	30.28	0.06	0.01	2130.	19.28
52	3.94	8.08	30.70	12.76	6.06	0.44	49.96	29.52		3.98	18.00	51.50	0.04	0.01	3206.	19.29
53	3.63	8.02	22.68	13.29	5.24	0.33	41.54	26.22		2.74	14.73	43.69	0.10	0.01	2668.	
54	1.87	8.15	12.72	3.71	2.07	0.18	18.68	9.01		3.24	5.99	18.24	0.10	0.05	1204.	
55																
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Appendix A (Continued).

WEEK#140 10/19/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.71	8.07						13.01								0.90
2	2.53	7.94						9.83								0.22
3	2.80	8.02						4.46								18.64
4	1.82	8.09						2.47								18.95
5	1.28	7.90						0.94								19.10
6	2.74	7.67						2.28								19.19
7	4.10	7.80						4.03								19.36
8	4.36	7.45						8.83								18.99
9	3.84	7.85						9.13								18.69
10	1.91	7.60						2.40								19.35
11	1.21	8.14						1.17								19.38
12	2.67	7.91						13.39								1.58
13	2.01	7.89						4.41								19.24
14	1.25	7.85						1.12								18.90
15	3.25	7.94						8.10								19.25
16	1.55	8.05						4.31								3.10
17	1.11	7.77						1.38								19.55
18	1.34	7.65						2.48								19.55
19	3.65	7.69						6.65								19.11
20	3.05	7.55						5.21								19.48
21	0.73	7.81						0.78								19.33
22																
23	1.38	8.04						1.16								19.17
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.49	8.20						1.76								18.88
35	2.77	7.66						4.98								19.50
51	2.61	7.90						4.55								19.30
52	3.92	7.85						29.04								19.31
53																
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55																
56																
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58																
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Appendix A (Continued).

WEEK#141 10/26/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.68	8.28						13.44								0.98
2	2.48	7.77						10.59								0.39
3																
4																
5	0.79	8.48						0.91								19.37
6	2.21	7.32						2.68								19.40
7	2.04	7.75						4.63								19.56
8	2.71	7.69						4.77								19.29
9	3.39	7.61						9.31								18.88
10	1.27	7.69						1.94								19.52
11	1.25	8.37						1.55								19.40
12	2.36	8.37						7.99								1.68
13	1.71	7.76						2.15								19.28
14	1.48	7.97						1.73								19.12
15	3.11	7.74						8.02								19.49
16	1.29	7.96						3.07								
17	1.16	7.67						1.87								19.65
18	4.45	7.52						14.16								19.65
19	3.63	7.58						10.81								19.26
20	2.17	7.54						4.50								19.64
21	0.66	7.85						1.35								19.39
22	1.01	7.92						1.88								
23	1.37	8.05						1.15								19.16
24																
25																
26																
27																
28																
29																
30																
31																
32																
33																
35	2.53	7.78						4.71								19.65
51	2.28	8.27						3.27								19.49
52	3.78	7.85						29.85								19.49
53																
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Appendix A (Continued).

WEEK#142 11/ 2/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.78	8.00						12.21								0.91
2	2.76	8.24						11.22								0.24
3	3.37	8.03						4.97								18.69
4	1.06	8.24						1.35								19.01
5	0.98	7.96						1.08								19.18
6	2.45	7.87						2.22								19.25
7	2.11	7.88						4.72								19.43
8	4.09	7.59						8.18								19.05
9	4.07	7.69						9.48								18.74
10	1.58	7.73						1.67								19.36
11	1.27	8.07						1.63								19.27
12																1.54
13	1.77	8.18						2.71								19.23
14	1.24	7.81						1.57								18.97
15	3.30	8.06						8.68								19.32
16	1.86	8.36						5.40								
17	1.31	8.68						2.22								19.60
18	5.35	7.43						27.78								19.62
19	4.10	7.64						13.74								19.11
20	3.02	7.69						7.42								19.51
21	0.71	8.07						1.77								19.42
22	0.72	8.35						0.79								
23	1.58	8.10						1.21								19.04
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.48	8.46						1.65								18.93
35	2.84	7.73						5.69								19.53
51	2.59	8.31						4.40								19.35
52	4.09	7.60						34.29								19.36
53																
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Appendix A (Continued).

WEEK#143 11/ 9/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.85	8.05						13.11								0.89
2	2.74	8.11						10.58								0.24
3	3.19	7.83						4.44								18.68
4																19.00
5	0.94	7.55						1.06								19.13
6	2.66	7.60						2.54								19.20
7	2.19	7.87						3.98								19.40
8	3.76	7.79						6.59								19.01
9	4.34	7.87						9.35								18.71
10	1.59	7.67						1.48								19.29
11	1.51	7.38						2.98								19.22
12	3.21	7.88						4.29								1.54
13	1.90	7.91						4.44								19.23
14	1.34	7.76						1.85								18.93
15	3.10	7.94						6.40								19.29
16	2.00	8.12						5.20								
17	1.39	7.77						2.17								19.61
18	6.57	7.50						23.91								19.63
19	3.81	7.72						8.03								19.03
20	3.26	7.70						5.54								19.48
21	0.75	8.08						1.92								19.39
22	1.04	8.22						3.00								
23	1.48	7.61						1.20								18.98
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.66	8.24						1.90								18.94
35	2.99	7.61						5.83								19.53
51	2.54	7.78						3.47								19.31
52	4.16	7.89						30.23								19.32
53																
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Appendix A (Continued).

WEEK#144 11/16/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.69	8.27	15.67	8.74	4.19	0.27	28.87	10.71		4.58	13.69	28.98	1.70	0.01	1914.	0.90
2	2.42	8.05	14.89	9.48	3.58	0.26	28.21	9.84		6.22	13.53	29.59	0.34	0.01	1964.	0.22
3	2.91	8.28	18.12	12.73	6.14	0.32	37.31	5.40		9.84	23.32	38.56	0.12	0.01	2671.	18.65
4	1.63	8.28	11.13	6.82	2.30	0.20	20.45	2.84		9.07	8.80	20.71	36.50	0.08	1505.	19.01
5	1.00	8.20	5.42	4.95	1.44	0.34	12.15	1.25		8.12	3.27	12.64	0.80	0.84	951.	19.13
6	2.42	7.81	9.50	14.70	6.19	0.39	30.78	3.00		7.10	20.98	31.08	0.26	0.01	2151.	19.19
7	1.85	8.22	10.20	9.75	2.87	0.23	23.05	3.75		7.04	12.49	23.28	0.12	0.01	1636.	19.39
8	3.78	7.95	21.91	20.40	7.96	0.37	50.64	8.01		10.98	33.68	52.67	0.35	0.01	3595.	18.98
9	3.83	8.17	24.05	17.64	7.93	0.39	50.01	9.09		9.18	34.02	52.29	0.17	0.02	3534.	18.69
10	1.31	8.00	7.40	6.03	2.38	0.04	15.85	1.64		9.44	5.25	16.33	1.03	0.01	1208.	19.26
11	1.12	8.30	5.03	6.40	1.42	0.09	12.94	1.81	0.12	5.42	6.10	13.45	37.70	0.06	956.	19.20
12	2.80	7.96	16.74	10.24	4.20	0.29	31.47	12.46		5.08	13.38	30.92	1.36	0.03	2047.	1.56
13	1.58	8.11	8.69	9.77	2.56	0.18	19.20	3.15		8.36	8.68	20.19	23.50	0.02	1472.	19.41
14	1.21	7.98	7.18	5.67	1.29	0.05	14.19	1.71		7.16	5.78	14.65	0.95	0.01	1071.	18.92
15	3.22	8.28	18.12	16.86	6.93	0.22	42.13	8.14		9.94	25.61	43.69	0.76	0.02	2972.	19.29
16	1.64	7.99	9.25	6.95	2.41	0.26	18.87	4.59		6.60	7.30	18.49	0.12	0.03	1307.	3.34
17	1.28	8.02	6.55	6.62	1.98	0.17	15.32	2.31		8.66	4.41	15.38	1.20	0.03	1136.	19.63
18	6.32	7.60	40.96	25.53	10.16	0.97	85.62	18.54		17.49	51.22	87.25	0.16	0.01	5896.	19.62
19	3.72	8.08	22.94	19.06	6.19	0.37	48.56	10.74		13.47	25.59	49.80	0.24	0.01	3431.	19.00
20	2.95	7.94	18.59	15.01	5.78	0.19	39.57	6.25		12.84	21.55	40.64	0.19	0.01	2846.	19.47
21	0.59	8.27	4.00	1.25	0.40	0.23	5.88	1.28		1.90	2.79	5.97	0.20	0.01	426.	19.42
22	0.96	8.18	5.42	3.05	1.13	0.16	9.76	2.39		3.80	4.19	10.38	0.41	0.11	724.	
23	1.35	8.00	5.93	6.78	1.88	0.07	14.66	1.30		7.46	6.24	15.00	98.00	0.02	1099.	18.97
24																
25	2.80	8.06	17.75	8.31	3.70	0.25	30.01	12.78		3.48	14.99	31.25	2.65	0.01	2015.	20.44
26	5.32	7.99	49.29	6.32	5.28	0.41	61.30			6.82			0.20	0.01		19.50
27																
28	2.76	8.16	18.30	6.44	2.82	0.21	27.77	11.34		3.60	14.30	29.24	3.49	0.01	1901.	19.92
29	2.55	8.22	15.23	8.04	3.33	0.35	26.95	9.62		3.99	14.78	28.39	3.35	0.01	1860.	19.47
30	3.29	7.74	14.99	15.97	5.60	0.39	38.95	3.44		8.52	28.69	40.65	0.23	0.01	2792.	18.56
31	6.07	7.40	45.14	14.81	8.60	0.70	69.25	43.94		5.37	19.99	69.30	0.23	0.01	4312.	
32																18.43
33	1.48	8.36	8.06	5.54	2.68	0.28	16.56	2.51	0.72	7.22	6.66	17.11	0.16	0.02	1211.	18.95
35	2.48	7.98	15.86	9.13	3.48	0.31	28.78	5.04		9.35	15.82	30.21	0.15	0.02	2111.	19.54
51	2.21	8.10	11.90	11.53	5.89	0.31	29.63	4.26		9.54	16.50	30.30	0.03	0.01	2114.	19.30
52	3.71	8.23	25.08	11.08	5.56	0.44	42.16	22.47		4.21	16.50	43.18	1.02	0.01	2729.	19.31
53	3.43	7.99	21.54	11.23	4.71	0.33	37.81	20.31		2.55	14.99	37.85	0.47	0.02	2386.	
54	1.78	8.20	13.18	3.15	2.00	0.24	18.57	9.96		3.01	5.46	18.43	0.12	0.04	1199.	
55																
56																
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59																
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Appendix A (Continued).

WEEK#145 11/23/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.92	8.28						13.87								0.90
2	2.62	8.38						9.09								
3	3.24	7.98						5.19								18.69
4	1.66	8.24						2.21								19.01
5	1.18	8.61						1.45								19.13
6	2.84	7.81						3.41								19.19
7	2.30	7.94						4.31								19.38
8	4.24	8.15						7.86								18.97
9	4.45	7.95						9.23								18.68
10	1.65	8.41						2.27								19.25
11	1.30	8.49						1.80								19.18
12	3.05	7.97						14.14								1.60
13	1.83	8.57						3.08								19.23
14	1.33	7.98						1.69								18.92
15	3.06	8.24						7.24								19.29
16	1.77	8.21						5.14								
17	1.45	8.61						2.40								19.62
18	6.96	7.63						18.42								19.62
19	3.93	7.65						9.76								18.98
20	3.58	8.11						7.11								19.47
21	0.74	8.32						1.35								19.42
22	0.86	8.57						1.78								
23	1.53	7.89						1.54								18.94
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.52	8.44						2.02								18.97
35	2.30	7.85						4.04								19.55
51	2.65	8.55						5.07								19.29
52	4.21	7.94						20.51								19.30
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#146 11/30/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1																0.90
2																0.23
5																18.88
4																18.96
5																19.13
6																19.17
7																19.37
8																18.96
9																18.69
10																19.24
11																19.17
12																1.68
13																19.22
14																18.92
15																19.27
16																3.28
17																19.58
18																19.60
19																18.97
20																19.45
21																19.36
22																
23																18.93
24																
25																
26																
27																
28																
29																
30																
31																
32																
33																
34																18.95
35																19.51
1																19.28
2																19.30
3																
4																
5																
6																
7																
8																
9																
10																

Appendix A (Continued).

WEEK#147 12/ 7/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.87	8.08	19.07	9.82	1.65	0.27	30.81	13.23		4.92	13.91	32.06	1.05	0.22	2103.	0.90
2	2.56	8.01	16.66	9.91	3.65	0.26	30.48	10.09		5.32	15.41	30.82	0.60	0.29	2059.	0.20
3	3.38	8.27	21.90	12.64	6.04	0.34	40.92	6.20		9.50	25.41	41.11	0.10	0.23	2863.	18.67
4	1.75	8.04	11.56	6.75	2.13	0.15	20.59	3.17		8.48	9.11	20.76	25.50	0.19	1500.	18.97
5	1.17	8.25	5.55	5.32	1.61	0.36	12.84	1.34		7.72	3.83	12.89	2.70	0.38	970.	19.11
6	2.75	8.41	12.41	15.50	6.73	0.39	35.03	4.58	0.88	7.32	23.94	36.72	0.55	0.18	2478.	19.16
7	2.14	8.55	11.66	11.22	3.05	0.20	26.13	4.51	0.68	7.98	13.17	26.34	0.15	0.12	1838.	19.34
8	4.32	7.83	26.40	22.87	8.22	0.33	57.82	9.18		11.00	37.79	57.97	0.15	0.26	3990.	18.97
9	3.85	8.45	23.86	17.40	6.32	0.33	47.91	9.75	0.96	8.18	29.68	48.77	0.20	0.12	3296.	18.66
10	1.45	8.50	9.39	5.97	2.05	0.11	17.52	1.97	0.88	9.06	6.45	18.36	7.87	0.08	1324.	19.23
11	1.23	8.05	5.95	0.12	1.24	0.13	13.44	2.15		5.64	5.77	13.56	52.00	0.12	977.	19.17
12	3.50	8.28	19.68	12.33	5.05	0.32	37.38	16.07		4.54	18.17	38.78	0.47	0.18	2493.	1.74
13	1.89	8.49	11.48	8.74	2.63	0.20	23.05	3.52	1.52	7.18	12.16	24.38	4.90	0.26	1671.	19.21
14	1.25	8.19	8.68	5.61	1.39	0.07	15.75	1.83		7.92	6.09	15.84	1.30	0.11	1172.	18.91
15	3.14	7.87	18.68	10.10	5.82	0.19	40.79	9.61		9.90	21.18	40.69	0.15	0.06	2792.	19.27
16	2.21	8.14	11.94	9.60	3.18	0.26	24.98	5.84		6.60	11.95	24.39	0.10	0.20	1699.	3.26
17	1.28	8.13	5.87	5.93	1.67	0.17	13.64	2.35		7.78	4.14	14.17	2.50	0.10	1038.	19.58
18	7.71	8.08	51.25	28.65	20.28	0.87	99.99	24.87		19.92	61.92	99.99	0.15	0.10	7104.	19.59
19	3.07	8.29	19.27	14.86	4.98	0.26	39.37	6.76		13.80	20.28	40.84	0.22	0.10	2867.	18.97
20	3.68	7.97	23.31	16.00	6.56	0.20	46.67	9.53		13.30	27.48	50.31	0.10	0.04	3413.	19.44
21	0.69	8.37	4.38	1.74	0.54	0.23	6.89	1.75	0.28	2.04	2.88	6.95	0.10	0.03	484.	19.36
22	2.47	8.45	14.38	7.63	3.28	0.25	25.54	10.75	1.56	2.56	10.83	25.70	0.00	0.06	1637.	
23	1.36	8.43	5.88	6.68	1.83	0.13	14.52	1.77	0.56	5.84	5.77	13.94	155.0	0.04	1009.	18.93
24																
25	3.00	8.36	20.29	8.94	3.65	0.32	33.20	14.48	0.92	2.44	14.94	32.78	1.20	0.03	2110.	20.35
26	6.25	8.03	59.90	7.43	5.98	0.43	73.74	13.33		7.60	55.07	76.00	0.15	0.03	5197.	19.49
27																
28	2.66	8.23	21.13	6.04	2.25	0.22	29.64	11.21		3.88	14.00	29.09	7.88	0.04	1949.	19.91
29	2.68	8.43	15.37	9.06	3.35	0.31	28.09	10.61	0.68	3.52	14.43	29.24	3.25	0.04	1892.	19.45
30	2.65	8.10	9.43	14.13	5.66	0.28	29.50	2.21		7.98	20.33	30.52	0.05	0.02	2121.	18.55
31	6.25	8.18	42.58	14.75	7.87	0.61	65.81	47.54		4.00	15.61	67.15	0.05	0.10	4073.	
32																18.41
33	1.45	8.48	7.01	5.80	2.62	0.27	15.70	2.40	2.60	6.60	6.14	15.14	0.10	0.27	1180.	18.92
35	4.35	7.87	26.91	16.09	9.13	0.49	52.62	11.73		15.20	27.19	54.12	0.05	0.32	3720.	19.48
51	2.44	7.95	14.37	12.64	5.53	0.33	32.87	5.42		8.80	17.07	31.29	0.34	0.23	2213.	19.26
52	4.04	8.63	27.07	9.49	4.29	0.40	41.25	19.55	0.80	4.34	15.44	40.13	1.40	0.36	2604.	19.29
53	3.79	8.26	24.06	10.75	4.10	0.31	39.22	23.77		2.64	14.73	41.14	0.50	0.13	2542.	
54	1.93	8.37	15.01	3.29	1.01	0.17	19.48	11.45	0.52	2.44	5.41	19.82	0.20	0.36	1260.	
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Appendix A (Continued).

WEEK#148 12/14/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.79	7.91						12.85								0.94
2	2.65	7.99						10.15								0.20
3	3.38	7.60						4.87								18.67
4																18.97
5	1.45	8.07						2.05								19.10
6	2.93	7.82						3.01								19.16
7	2.36	8.00						5.49								19.36
8	4.00	7.87						9.94								18.95
9	3.88	7.90						7.60								18.68
10	1.71	8.11						1.98								19.22
11	1.15	8.12						1.45								19.15
12	3.09	8.00						18.11								1.19
13	1.98	7.82						5.43								19.19
14	1.40	7.77						3.45								18.90
15	3.25	8.15						8.50								19.26
16	2.46	8.09						7.61								3.18
17	1.21	7.85						2.04								19.55
18	6.90	7.64						26.81								19.57
19	2.62	7.98						3.92								18.96
20	3.75	7.99						10.07								19.42
21	0.85	8.19						0.90								19.35
22	0.98	8.15						2.12								
23	1.80	7.90						2.52								18.92
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.54	8.39						1.89								18.94
35	2.69	7.76						4.44								19.48
51	3.12	7.93						11.59								19.26
52	3.85	7.73						27.60								19.27
53																
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Appendix A (Continued).

WEEK#149 12/21/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.81	7.92						13.01								
2	2.51	8.00						11.00								0.94
3	3.31	7.84						4.83								0.18
4	1.94	8.04						2.77								18.67
5	1.15	8.11						1.14								18.97
6	3.03	7.77						3.48								19.09
7	1.92	8.08						3.92								19.15
8	4.29	7.87						8.64								19.34
9	3.89	7.92						8.29								18.96
10	1.68	7.79						1.97								18.68
11	1.33	8.07						2.46								19.19
12	3.21	8.40						19.60								19.14
13	2.02	7.72						5.44								1.80
14	1.39	7.89						2.38								19.20
15	3.17	8.01						8.40								18.60
16	2.24	8.48						5.96								19.25
17	1.21	7.85						1.99								3.16
18	7.07	7.70						28.93								19.55
19	2.62	7.79						4.02								19.57
20	3.85	7.77						9.04								18.96
21	0.88	8.37						1.90								19.41
22	0.81	8.12						1.73								19.36
23	1.35	8.03						1.18								
24																18.93
25																
26																
27																
28																
29																
30																
31																
32																
33	1.54	8.46						1.93								
34	2.75	7.91						4.93								18.93
51	3.13	7.99						10.35								19.48
52	3.98	8.13						29.05								19.25
53																19.26
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Appendix A (Continued).

WEEK#150 12/26/79

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.71	7.76						12.65								0.94
2	2.75	7.93						10.87								0.28
3	3.14	7.99						4.41								18.67
4																
5	1.19	8.10						1.46								19.10
6	2.76	7.78						2.73								19.16
7	1.92	7.65						4.07								19.34
8	4.22	7.86						7.90								18.96
9	3.71	7.71						7.64								18.69
10	1.79	7.70						2.01								19.11
11	1.25	7.92						0.08								19.15
12	3.12	7.51						18.06								1.80
13	2.36	7.73						6.87								19.21
14	1.29	7.85						1.75								18.91
15	3.13	8.03						8.12								19.26
16	2.29	8.00						6.66								3.18
17	1.25	7.93						2.19								19.55
18	7.24	7.74						29.89								19.56
19	2.71	7.72						3.72								18.96
20	3.92	7.79						8.75								19.42
21	0.90	7.55						2.51								19.39
22	1.18	8.03						3.33								
23	1.29	7.58						1.05								18.94
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.53	8.01						1.61								18.94
35	2.84	7.82						4.54								19.50
51	3.14	7.89						11.32								19.25
52	3.81	7.59						27.20								19.26
53																
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Appendix A (Continued).

WEEK#151 1/ 4/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.47	7.94						16.64								0.95
2	2.70	8.43						11.02								0.17
3	3.10	7.91						4.63								18.68
4	2.03	7.96						3.28								18.97
5	1.11	7.89						1.28								19.10
6	2.86	7.60						3.69								19.16
7	2.03	7.99						4.78								19.33
8	4.12	7.51						8.19								18.96
9	3.47	7.75						6.90								18.69
10	1.74	7.57						1.87								19.21
11	1.36	7.83						1.80								19.15
12	3.20	7.52						19.34								1.74
13	2.59	7.82						4.62								19.21
14	1.53	7.65						1.80								18.91
15	3.26	8.02						8.43								19.26
16	2.09	7.94						5.63								3.10
17	1.26	7.81						2.30								19.53
18	7.56	7.61						29.09								19.54
19	2.67	7.67						5.30								18.96
20	3.78	7.65						8.56								19.45
21	1.18	7.72						4.55								19.34
22	0.82	8.02						1.90								
23	1.30	7.66						1.34								18.94
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.65	8.03						2.16								18.94
35	2.92	7.68						5.36								19.47
51	3.19	7.88						12.31								19.25
52	3.86	7.70						27.34								19.26
53																
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58																
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Appendix A (Continued).

WEEK#152 1/11/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	1.66	8.35						8.12								0.96
2	2.38	8.28						12.93								0.17
3	2.91	8.13						5.74								18.66
4	2.11	8.15						3.20								18.96
5	1.12	8.58						1.52								19.09
6	2.82	7.64						4.83								19.15
7	1.68	7.86						3.71								19.32
8	4.22	7.66						7.71								18.95
9	2.96	8.01						5.15								18.69
10	1.83	7.92						1.97								19.21
11	1.22	8.24						1.61								19.15
12	3.14	8.14						14.96								1.74
13	1.64	8.57						4.42								19.21
14	1.77	8.19						4.01								18.90
15	3.30	8.18						8.13								19.24
16	2.22	8.57						5.77								
17	1.39	8.13						2.55								19.51
18	5.40	7.58						17.71								19.51
19	2.56	7.83						5.14								18.95
20	3.91	7.90						8.62								19.40
21	0.96	8.41						1.96								19.32
22	1.48	8.17						5.24								
23	2.50	8.18						9.67								18.94
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.66	8.74						3.56								18.92
35	3.11	7.97						9.38								19.45
51	1.84	8.18						7.73								19.24
52	5.42	7.66						27.30								19.26
53																
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Appendix A (Continued).

WEEK#153 1/18/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.14	8.23	19.36	10.14	3.97	0.30	33.77	11.56		5.08	17.91	34.55	0.80	0.03	2288.	
2	2.78	8.30	18.74	10.11	3.67	0.30	32.82	10.65	0.68	5.80	16.86	33.99	0.20	0.02	2251.	0.16
3	2.89	8.45	19.38	11.38	5.57	0.30	36.63	3.70	1.74	7.87	24.20	37.51	0.11	0.01	2579.	18.66
4	2.21	8.21	13.68	10.54	3.15	0.17	27.54	4.29		11.14	11.03	26.46	0.11	0.01	1932.	18.95
5	1.33	8.26	5.72	6.07	2.27	0.31	14.37	2.30		6.94	5.42	14.66	2.67	0.02	1058.	19.09
6	2.91	7.99	13.45	10.97	7.39	0.37	38.18	6.21		7.18	25.14	38.53	1.13	0.02	2619.	19.14
7	1.64	8.31	8.95	7.42	2.51	0.15	19.03	2.45	1.10	5.57	10.41	19.53	2.11	0.01	1351.	19.31
8	4.08	8.12	23.53	19.21	7.87	0.36	50.97	7.72		9.46	33.07	50.25	0.52	0.01	3475.	18.96
9	3.35	7.87	20.25	14.74	6.25	0.28	41.52	5.48		9.15	27.12	41.75	0.19	0.01	2903.	18.69
10	1.76	8.00	11.29	8.10	2.90	0.09	22.38	1.76		11.46	8.16	21.38	3.37	0.02	1614.	19.21
11	1.26	8.27	5.93	6.26	1.41	0.11	13.71	1.88		5.74	6.14	13.76	20.67	0.02	995.	19.14
12	3.09	8.40	19.74	11.31	4.37	0.30	35.72	17.22	0.53	5.07	14.11	36.93	0.20	0.02	2359.	1.76
13	2.60	8.26	16.68	10.22	2.81	0.22	29.93	9.88		5.24	15.93	31.05	0.91	0.01	2066.	19.22
14	1.57	8.09	10.10	8.18	1.78	0.15	20.21	1.60		9.35	8.95	19.90	0.92	0.02	1481.	18.90
15	3.09	8.45	17.99	16.43	5.81	0.17	40.40	7.98	1.84	7.80	21.60	39.22	0.13	0.02	2672.	19.24
16	2.24	8.45	11.24	9.66	3.17	0.24	24.31	7.12	0.74	6.58	10.14	24.58	0.32	0.02	1663.	2.86
17	1.38	8.24	6.22	7.79	2.05	0.16	16.22	2.55		8.25	5.94	16.74	1.98	0.02	1209.	19.48
18	8.14	7.87	56.58	36.95	22.51	1.04	117.1	33.72		20.05	64.54	118.3	0.18	0.01	7874.	19.49
19	2.72	8.06	11.07	11.99	7.48	0.20	30.74	4.59		10.90	15.17	30.66	0.19	0.01	2150.	18.96
20	3.91	8.04	20.79	14.82	5.36	0.20	41.17	8.78		13.10	20.21	42.09	0.33	0.02	2929.	19.40
21	0.80	8.42	4.83	3.28	0.70	0.19	8.30	1.68		2.34	4.93	8.95	0.11	0.01	632.	19.30
22	1.13	8.45	6.88	3.22	1.16	0.16	11.42	1.97		3.99	5.85	11.81	0.33	0.09	837.	
23	1.38	8.24	6.69	6.49	1.78	0.11	15.07	1.51		7.35	6.25	15.11	53.00	0.02	1112.	18.94
24																
25	2.99	8.13	19.88	8.68	3.46	0.23	32.25	14.81		3.50	14.69	33.00	0.24	0.01	2126.	20.28
26	5.71	8.50	51.62	5.84	5.10	0.44	63.00	10.43	0.56	6.07	48.41	65.47	0.12	0.01	4465.	19.52
27																
28	2.66	8.52	24.01	5.57	2.16	0.19	31.93	15.24	0.75	3.32	13.32	32.63	7.54	0.01	2102.	19.92
29	2.71	8.38	19.27	8.49	3.00	0.30	31.06	9.96	0.52	4.26	17.44	32.18	0.33	0.01	2128.	19.49
30	3.18	7.79	14.20	14.69	6.67	0.78	36.34	1.62		5.56	29.56	36.74	0.13	0.02	2549.	18.56
31	6.15	7.62	42.06	14.38	7.52	0.60	64.56	40.07		5.60	16.86	62.53	0.32	0.01	3942.	
32																18.43
33	1.59	8.71	8.47	6.60	2.69	0.24	18.00	1.82	1.60	8.26	7.10	18.78	0.11	0.02	1327.	18.90
35	3.17	8.16	20.98	11.66	4.53	0.27	37.44	5.74		11.40	20.63	37.77	0.11	0.01	2671.	19.51
51	3.21	8.26	20.25	16.43	6.54	0.32	43.54	16.24		5.44	20.66	42.34	0.83	0.05	2787.	19.23
52	3.98	8.40	30.78	14.28	6.03	0.40	51.49	31.69	0.69	1.98	19.44	53.80	0.73	0.01	3281.	19.25
53	3.53	8.41	18.86	14.21	5.50	0.31	38.88	21.22	0.30	1.59	16.66	39.77	5.09	0.03	2456.	
54	2.28	8.38	15.93	4.56	3.26	0.23	23.98	13.64	0.46	2.83	6.14	23.07	0.14	0.01	1471.	
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Appendix A (Continued).

WEEK#154 1/25/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.04	8.22						13.32								0.15
2	2.67	8.37						9.03								18.66
3	3.02	8.32						3.62								18.95
4	2.20	8.04						4.02								19.09
5	1.53	8.20						2.52								19.14
6	2.70	7.61						2.63								19.44
7	1.52	8.18						1.96								18.96
8	4.18	7.61						5.98								18.69
9	3.42	7.86						5.03								19.20
10	2.02	7.79						2.59								19.14
11	1.19	7.92						1.35								1.68
12	3.28	8.11						18.50								19.21
13	2.68	7.93						9.47								18.90
14	1.98	7.88						2.34								19.23
15	2.84	8.12						5.70								2.94
16	2.31	8.35						3.48								19.49
17	1.48	8.00						1.77								19.51
18	8.28	7.57						29.44								18.96
19	2.23	7.82						3.87								19.39
20	3.69	7.77						8.30								19.30
21	0.69	8.44						1.35								
22	1.05	8.42						3.06								18.94
23	1.36	7.94						1.05								
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.70	8.27						2.70								18.90
35	3.02	7.97						4.34								19.44
51	3.63	8.11						20.69								19.23
52	3.84	8.06						26.31								19.25
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#155 2/ 1/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.07	7.81						14.17								
2	2.79	7.86						9.66								0.15
3																
4																
5	0.99	8.19						1.38								19.05
6	2.56	7.94						2.54								19.14
7	1.92	8.00						3.03								19.32
8	3.24	7.92						4.57								18.95
9	3.52	7.91						5.88								18.69
10	1.75	8.05						2.22								19.20
11																
12	2.61	8.15						12.90								1.68
13	2.73	7.96						10.17								19.22
14	2.13	8.05						2.31								18.90
15	2.89	8.03						6.67								19.23
16	1.89	8.14						3.75								
17																
18	6.30	7.68						20.33								19.51
19	4.27	7.91						4.40								18.95
20	3.78	7.76						7.29								19.46
21	0.69	8.29						1.55								19.28
22	1.10	8.21						3.53								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.47	8.03						1.72								18.90
35	3.00	8.01						4.57								19.43
51	3.91	8.31						26.17								19.23
52	3.96	8.10						27.00								19.25
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#156 2/ 8/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.82	8.32	16.95	9.84	3.96	0.26	31.03	12.46		5.10	14.19	31.75	0.22	0.02	2080.	
2	2.62	8.32	17.57	10.67	3.69	0.26	32.19	9.66		7.12	15.12	31.90	0.05	0.04	2176.	0.16
3																
4																
5	0.97	8.31	4.44	4.19	1.29	0.31	10.23	1.16		5.00	4.21	10.37	0.34	0.04	762.	19.02
6	2.61	7.79	15.67	13.31	5.94	0.35	35.27	2.91		8.48	25.45	36.84	0.28	0.01	2556.	19.13
7	1.90	8.05	11.33	11.20	3.21	0.29	26.03	4.02		9.08	12.24	25.34	0.11	0.01	1820.	19.30
8	3.92	8.00	23.66	22.32	8.56	0.32	54.86	6.38		10.00	37.74	54.12	0.26	0.01	3757.	18.94
9	3.45	7.99	20.20	16.95	7.24	0.28	44.67	5.33		9.10	30.92	45.35	0.08	0.01	3132.	18.69
10	2.25	7.91	16.89	10.79	3.87	0.13	31.68	3.12		14.63	12.43	30.18	1.40	0.01	2257.	19.19
11																
12	3.33	8.16	21.69	11.95	4.82	0.32	38.78	20.72		4.35	15.71	40.78	0.04	0.03	2564.	1.66
13	2.60	8.12	18.30	10.52	3.16	0.25	32.23	11.93		4.30	16.03	32.26	3.55	0.01	2135.	19.23
14	2.06	7.97	11.98	12.55	2.58	0.10	27.21	2.56		10.88	13.44	26.88	0.38	0.01	1962.	18.90
15	3.08	8.39	17.50	17.18	6.37	0.18	41.23	7.58	1.44	9.40	21.34	39.76	0.06	0.02	2741.	19.23
16																2.95
17																
18	8.50	7.70	52.77	36.25	22.51	0.92	112.5	32.14		19.95	65.13	117.3	0.14	0.01	7734.	19.50
19	2.32	8.53	11.55	11.71	7.47	0.21	30.94	5.31	0.47	9.12	15.41	30.31	0.92	0.01	2098.	18.95
20	3.72	8.50	25.47	12.22	8.48	0.19	46.36	7.49		5.25	31.44	44.18	0.11	0.01	3037.	19.39
21	0.79	8.43	5.59	1.73	0.78	0.19	8.29	2.73		1.86	3.75	8.34	0.08	0.01	570.	19.29
22	1.99	8.77	13.45	6.65	2.48	0.28	22.86	5.83	1.28	6.40	9.27	22.78	0.24	0.13	1564.	
23																
24																
25	2.88	8.33	20.53	8.52	3.44	0.23	32.72	13.47		3.27	15.30	32.04	0.14	0.01	2105.	20.86
26	5.60	8.72	54.33	7.15	5.88	0.34	67.70	9.66	0.84	5.75	52.05	68.30	0.08	0.01	4695.	19.49
27																
28	2.51	8.58	20.15	6.23	2.31	0.20	28.89	12.84	0.41	3.53	13.85	30.63	7.27	0.01	1972.	19.91
29	2.70	8.54	19.40	9.27	3.51	0.25	32.43	9.15	0.50	4.21	17.59	31.45	0.18	0.01	2125.	19.48
30	2.81	8.19	15.65	15.91	6.63	0.31	38.50	1.64		8.71	28.00	38.35	0.12	0.01	2706.	18.55
31	5.81	7.70	17.82	21.89	12.68	0.57	52.96	35.47		4.72	14.05	54.24	0.11	0.01	3245.	
32																18.41
33	1.32	8.49	8.30	7.11	12.84	0.25	18.50	1.86	2.40	7.93	5.76	17.95	0.10	0.01	1398.	18.89
35	2.99	8.02	18.27	11.09	4.68	0.26	34.30	4.63		9.46	19.36	33.45	0.16	0.01	2380.	19.43
51	3.87	8.19	19.87	14.30	5.89	0.27	40.33	17.48		4.08	18.74	40.30	0.11	0.01	2594.	19.23
52	3.75	8.08	30.14	12.62	5.20	0.36	48.32	26.20		4.12	18.63	48.95	0.14	0.02	3098.	19.25
53	3.97	7.99	22.98	15.74	6.15	0.30	45.17	25.61		2.84	17.28	45.73	0.14	0.02	2841.	
54	2.11	8.15	16.23	4.03	2.90	0.25	23.41	13.44		3.16	6.40	23.00	0.06	0.01	1476.	
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#157 2/15/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.96	8.00						13.36								
2	2.65	8.35						8.87								0.16
3																
4																
5	1.14	8.15						1.53								19.01
6	2.69	7.67						2.54								19.13
7																
8	3.90	7.76						5.77								18.94
9	3.54	7.87						5.77								18.68
10	1.98	7.96						4.07								19.19
11																
12	3.43	8.15						21.78								1.68
13	2.69	8.02						9.29								19.22
14	2.24	8.06						3.19								18.89
15	3.26	8.12						7.59								19.22
16	2.43	8.33						4.32								2.97
17																
18	7.90	7.52						27.79								19.51
19	2.38	7.97						3.10								18.95
20																
21	1.41	8.00						2.35								
22	1.60	8.07						4.63								19.27
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.64	8.31						1.54								
35	3.01	7.96						4.67								18.88
51	3.74	7.92						25.96								19.42
52	3.82	8.50						28.07								19.23
53																19.24
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#158 2/22/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.00	8.18						18.63								
2	2.67	8.18						8.94								0.16
3																
4																
5	1.04	8.21						1.21								19.01
6	2.76	7.48						3.21								19.13
7																
8	3.99	7.82						6.05								18.94
9	3.44	7.87						5.21								18.68
10	1.88	8.14						3.40								19.19
11																
12	3.25	8.01						18.99								1.70
13	2.62	8.01						9.63								19.23
14	2.41	7.79						2.76								18.89
15	3.37	8.09						8.27								19.22
16	2.20	8.27						5.60								2.96
17																
18	8.13	7.38						27.08								19.50
19	2.54	7.86						3.76								18.95
20																
21	0.77	8.35						1.96								19.27
22	1.43	8.33						5.02								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.47	8.19						1.24								18.88
35	2.97	7.90						4.48								19.43
51	3.85	8.13						27.53								19.23
52	3.49	8.19						20.22								19.24
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#159 2/29/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.94	8.13						13.15								0.15
2	2.77	8.39						10.91								
3																
4																
5	0.98	8.30														
6	2.29	8.28						1.51								
7								3.22								19.01
8	4.03	7.72														
9	3.44	8.01						7.95								
10	1.78	7.88						6.81								
11								2.67								18.94
12	3.54	8.19														18.66
13	2.86	7.97						18.92								19.19
14	2.31	8.01						12.36								
15	3.44	7.97						3.81								1.68
16	2.60	8.15						10.17								19.23
17								6.55								18.89
18	7.11	7.58														19.22
19	2.49	8.04						23.84								2.96
20								4.20								
21	1.76	7.96														19.50
22	1.41	8.34						2.53								18.94
23								4.82								
24																19.27
25																
26																
27																
28																
29																
30																
31																
32																
33	1.28	8.09														
34	3.08	8.16						1.79								
35	3.97	7.92						7.51								
51	4.12	8.32						21.88								18.88
52								22.16								19.41
53																19.23
54																19.24
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#100 3/ 7/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2:81	8:19	18:18	8:35	4:09	0:28	30.90	14.75		3:82	11:82	30:39	0:08	0:03	1970:	
2	2:68	8.24	17.30	9.76	4.02	0.30	31.38	12.10		5.12	13.69	30.91	0.12	0.03	2053.	0.14
3																
4																
5	0:80	8:27	3:85	3:61	1:21	0:23	9.10	1.55		4:48	2.94	8.97	0:90	0:04	658:	18:02
6	2.74	7.50	12.16	15.25	7.14	0.35	34.95	4.38		8.68	20.92	33.98	0.16	0.02	2376.	19.13
7																
8	3:75	7.57	23.21	18.90	7.45	0.34	49.90	7.27		10.22	30.40	47.89	0.17	0.02	3358.	18.94
9	3.20	8.06	22.14	12.35	5.75	0.28	41.53	6.22		8.58	25.40	40.20	0.06	0.01	2822.	18.69
10	1.95	8.20	13.30	8.20	3.06	0.09	24.65	3.47		11.30	9.66	24.43	0.44	0.02	1787.	19.19
11																
12	3.32	8.26	20.59	12.51	5.27	0.31	38.68	19.22		4.44	15.46	39.12	0.12	0.03	2495.	1.68
13	2.36	8.15	16.29	7.81	2.48	0.26	26.84	10.48		4.52	12.30	27.30	1.05	0.02	1809.	19.23
14	2.17	8.20	14.25	11.23	4.31	0.14	27.93	4.59		10.72	12.56	27.87	0.34	0.01	2006.	18.89
15	3.41	8.10	19.79	14.60	7.03	0.21	45.63	9.85		9.94	23.68	43.47	0.07	0.03	3014.	19.23
16	2.54	8.11	13.98	12.12	3.83	0.29	30.22	6.34		6.26	16.24	28.84		0.02	2009.	2.96
17																
18	7.63	7.64	54.05	29.61	19.17	0.88	103.7	25.86		16.78	60.17	102.F	0.22	0.02	6934.	19.51
19	2.66	7.80	16.56	13.27	4.03	0.24	34.10	5.78		12.18	5.35	33.31	0.06	0.02	1910.	18.95
20																
21	0.84	8.32	5.74	1.84	0.90	0.22	8.70	2.99		1.80	6.78	8.58	0.06	0.03	730.	19.29
22	0.95	8.22	5.67	3.19	1.09	0.13	10.08	2.58		1.72	5.60	9.90	2.12	0.13	678.	
23																
24																
25	2.95	7.87	19.79	9.45	3.87	0.26	33.37	14.37		3.30	14.89	32.56	0.11	0.02	2127.	20.25
26	4.72	8.08	51.35	5.95	4.46	0.31	62.10	9.40		5.94	46.00	61.24	0.10	0.02	4272.	19.53
27																
28	2.72	8.19	21.72	5.99	2.46	0.21	30.38	13.00		4.00	13.12	30.12	6.48	0.02	1993.	19.91
29	2.60	8.23	17.67	9.26	3.60	0.32	30.85	10.74		4.60	14.00	29.34	0.10	0.02	1982.	19.47
30	2.48	7.72	13.10	12.31	5.70	0.26	31.37	2.17		7.36	22.38	31.91	0.21	0.03	2228.	18.57
31	5.72	7.42	43.26	13.37	7.71	0.58	64.92	46.85		9.80	11.66	68.31	0.16	0.02	4198.	
32																18.42
33	1.57	8.51	8.69	6.98	3.77	0.33	19.77	2.45	2.80	7.70	6.02	18.97	0.21	0.02	1328.	18.69
34	3.21	7.86	21.72	11.82	5.50	0.31	39.35	7.83		11.42	20.35	39.60	0.06	0.02	2767.	19.42
35	3.81	8.11	24.69	13.42	5.55	0.37	44.03	22.52		4.06	15.70	42.28	0.02	0.02	2719.	19.23
36	3.84	8.06	27.07	12.44	5.39	0.40	45.30	21.64		4.50	17.28	43.42	0.46	0.03	2824.	19.24
37																
38	2.02	8.01	14.25	3.67	2.79	0.23	20.94	13.65		3.34	4.04	21.03	0.18	0.03	1326.	
39																
40																
41																
42																
43																
44																
45																
46																
47																
48																
49																
50																

Appendix A (Continued).

WEEK#161 3/14/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.83	8.19						12.69								
2	2.75	8.07						11.26								
3																0.14
4																
5	0.92	8.07						1.38								19.02
6	2.81	7.41						4.60								19.13
7																
8	3.51	7.63						6.63								18.95
9	3.08	7.73						5.98								18.69
10	1.03	7.99						1.47								19.19
11																
12	3.45	8.15						17.78								1.66
13	2.79	7.64						9.79								19.23
14	2.35	7.82						3.91								19.03
15	3.43	8.07						10.04								19.23
16	2.60	7.98						8.03								2.94
17																
18	7.61	7.43						23.78								19.50
19	2.45	7.69						4.57								18.95
20																
21	0.73	8.28						2.03								19.28
22	0.83	8.20						1.76								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.13	8.40						1.74								18.90
35	3.31	7.99						7.75								19.35
1	4.03	7.83						22.51								19.23
52	3.70	8.37						21.10								19.24
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#152 3/21/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.01	8.52						14.03								
2	2.82	7.95						12.38								0.15
3																
4																
5	0.78	8.31						1.39								19.04
6																
7																
8	4.11	7.75						8.51								18.97
9	3.11	8.36						6.10								18.71
10	1.22	8.22						1.89								19.24
11																
12	3.42	8.28						18.65								1.66
13	2.71	8.23						12.03								19.24
14	2.29	8.06						4.10								18.91
15	3.23	8.27						9.85								19.23
16	2.76	8.11						7.25								2.98
17																
18	7.44	7.66						24.02								19.52
19	2.38	8.10						2.43								19.02
20																
21	0.75	8.37						2.11								
22	0.69	8.43						1.25								19.29
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.34	8.03						1.89								18.90
35	3.05	8.02						7.55								19.44
51	3.92	8.37						23.03								19.25
52	3.92	8.28						22.83								19.26
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK=163 3/26/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.09	8.05						13.38								
2	2.78	8.16						10.71								0.17
3																
4																
5	0.93	6.01						1.40								19.06
6	2.64	7.50						4.35								19.16
7																
8	3.97	7.59						7.76								18.98
9	3.06	8.01						5.64								18.72
10	1.75	7.72						2.46								19.26
11																
12	3.47	8.20						18.06								1.65
13	2.73	8.05						11.61								19.25
14	2.22	8.04						3.84								18.97
15	3.18	8.19						9.65								19.24
16	2.79	8.26						6.90								2.98
17																
18	7.13	7.42						21.36								19.52
19	2.50	7.76						5.68								19.03
20																
21	0.84	8.24						2.41								19.31
22	0.74	8.31						1.46								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.68	8.17						2.66								18.92
35	2.96	7.84						7.57								19.46
51	3.91	7.91						22.30								19.27
52	3.88	8.19						21.51								19.28
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#164 4/ 4/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3:17	8.19	19.43	9.91	4.34	0.25	33.93	15.34		1.98	15.67	32.99	0.33	0.04	2125.	
2	2.88	8.27	17.16	11.51	4.47	0.25	33.39	10.73		6.50	15.67	32.90	0.03	0.03	2219.	0.19
3																
4																
5	0.95	8.08	4.04	4.46	1.37	0.27	10.14	1.46		5.42	3.71	10.59	0.19	0.04	770.	19.06
6	2.74	7.60	12.90	15.04	6.97	0.34	35.25	4.36		7.46	24.15	35.97	0.19	0.02	2466.	19.17
7																
8	4.18	7.63	23.89	18.36	7.52	0.39	50.16	7.90		3.89	39.04	50.83	0.34	0.03	3416.	18.98
9	3.08	8.06	20.76	14.45	6.43	0.26	41.90	5.66		8.31	25.87	39.84	0.19	0.01	2805.	18.71
10	1.69	7.72	11.77	4.93	1.95	0.10	18.75	3.20		6.40	8.37	17.97	0.28	0.03	1303.	19.26
11																
12	3.36	8.27	19.93	13.04	5.40	0.31	38.68	17.30		4.50	16.66	38.46	0.14	0.03	2485.	1.66
13	2.78	8.11	17.72	9.31	3.15	0.30	30.45	11.18		4.62	14.47	30.27	2.14	0.03	2017.	19.27
14	2.26	7.87	14.87	10.94	2.23	0.12	28.16	3.66		10.54	12.65	26.85	0.15	0.03	1973.	18.91
15	3.27	8.25	18.95	17.25	5.33	0.22	41.75	9.57		9.42	24.15	43.14	0.06	0.04	2929.	19.25
16	2.77	8.39	16.06	11.14	4.01	0.25	31.46	6.63	1.04	5.32	19.14	32.13	0.05	0.02	2161.	3.00
17																
18	7.13	7.43	47.10	26.21	17.68	0.78	91.77	20.62		5.37	62.67	88.66	0.08	0.04	5922.	19.55
19	2.30	7.72	13.45	8.23	2.59	0.25	24.52	4.82		4.12	13.79	22.73	0.09	0.03	1600.	19.04
20																
21	0.80	8.29	5.46	1.45	0.84	0.23	7.98	2.62		1.53	3.73	7.88	0.07	0.03	539.	19.33
22	0.70	8.15	3.47	3.02	0.92	0.10	7.51	1.37		2.96	2.99	7.32	2.98	0.28	528.	
23																
24																
25	3.02	7.80	19.04	9.28	3.87	0.22	32.41	13.83		3.13	16.81	33.77	0.13	0.01	2168.	20.25
26	5.61	7.80	57.71	8.05	6.13	0.37	72.26	11.45		6.70	52.26	70.41	0.08	0.01	4902.	19.53
27																
28	2.43	8.30	19.93	5.27	2.43	0.23	27.86	10.34	0.24	3.00	14.68	28.26	6.98	0.02	1864.	20.01
29	2.63	8.28	17.89	8.55	3.29	0.30	30.03	10.04		4.38	15.67	30.09	0.17	0.03	2010.	19.51
30	4.59	7.61	16.20	12.76	5.81	0.22	34.99	2.81		9.08	24.67	36.56	0.31	0.03	2546.	18.62
31	5.86	7.35	41.32	13.95	8.07	0.61	63.95	43.39		8.08	12.18	63.65	0.13	0.01	3968.	
32																
33	1.14	8.46	5.73	5.14	2.08	0.17	13.12	1.83	1.41	6.23	3.66	13.13	0.20	0.03	930.	18.46
35	2.77	7.86	18.66	9.51	4.40	0.26	32.83	6.88		9.48	17.49	33.85	0.07	0.02	2346.	18.91
51	3.66	8.13	20.84	14.58	5.87	0.33	40.53	21.75		3.62	17.49	42.86	0.19	0.04	2687.	19.47
52	3.91	8.15	27.14	13.19	5.66	0.34	46.33	21.18		4.04	18.95	44.17	0.58	0.03	2878.	19.28
53	3.95	7.92	23.01	15.83	5.32	0.34	44.50	23.44		3.22	18.11	44.77	0.13	0.03	2821.	19.30
54	1.57	8.17	10.77	2.96	2.10	0.18	16.01	9.52		2.52	3.90	15.94	0.03	0.03	1018.	
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#165 4/11/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.48	8.26						12.60								
2	1.98	8.35						7.89								0.21
3																
4																
5	0.73	8.48						1.29								19.08
6	2.23	8.13						3.44								19.19
7																
8	4.02	7.82						9.51								18.99
9	3.00	8.05						6.34								18.72
10	1.21	8.26						1.83								19.26
11																
12	3.32	8.14						12.13								1.63
13	2.74	8.12						11.97								19.26
14	2.23	8.11						4.18								18.92
15	3.17	8.30						10.46								19.40
16	2.81	7.81						8.80								3.10
17																
18	4.61	7.63						21.47								19.79
19	1.72	8.17						3.58								19.04
20																
21																19.36
22	0.81	8.23						1.88								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.18	8.19						2.14								18.92
35																19.53
51	3.83	8.29						23.34								19.30
52	3.89	8.24						28.61								19.31
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#166 4/18/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.81	8.11						12.82								
2	2.61	8.07						11.08								0.65
3																
4																
5	0.88	7.61						1.37								19.25
6	2.76	7.60						4.17								19.38
7																
8	3.04	7.62						6.13								19.21
9	3.48	7.94						7.11								18.94
10	1.12	8.04						1.95								19.47
11																
12	2.72	8.18						11.57								1.86
13	2.01	8.14						6.73								19.44
14	2.15	7.96						3.77								19.23
15	3.04	8.32						9.33								19.39
16	2.17	8.09						5.38								
17																
18	4.30	7.53						17.75								19.68
19	3.13	8.03						5.97								19.23
20																
21	0.87	8.17						2.89								19.46
22	0.69	8.25						1.28								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.35	8.25						2.39								19.29
35	2.59	7.72						6.92								19.72
51	3.53	8.04						21.89								19.50
52	3.75	8.09						22.31								19.52
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#167 4/25/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.99	8.17						13.52								
2	2.67	8.27						10.62								
3																0.41
4																
5	0.80	7.92						1.32								
6	2.68	7.76						4.10								19.32
7																19.48
8	2.71	7.76						5.42								
9	3.43	7.82						6.49								19.23
10	1.58	7.90						2.47								18.87
11																19.65
12	3.00	8.10						13.23								
13	1.70	8.09						4.18								1.70
14	2.32	7.89						4.20								19.33
15	3.14	8.04						9.89								19.10
16	2.53	8.16						6.72								19.54
17																
18	4.49	7.44						17.75								
19	3.25	7.90						5.82								19.74
20																19.32
21																
22	0.64	7.93						1.09								19.59
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.47	8.38						2.19								19.16
35	2.67	7.94						6.40								19.80
51	3.92	8.15						22.67								19.62
52	3.97	8.06						23.17								19.63
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#168 5/ 2/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	1.35	8.26						5.43								
2	2.16	8.17						7.91								0.37
3																
4																
5	0.59	8.09						1.10								19.38
6	1.54	7.98						2.07								19.52
7																
8	2.00	7.84						3.49								19.06
9	2.53	7.96						5.14								19.02
10	1.09	8.41						1.77								19.47
11																
12	1.89	8.30						6.75								1.64
13																19.31
14	1.13	8.13						2.48								19.19
15	3.45	7.91						9.38								19.54
16	1.67	8.28						3.88								
17																
18	2.75	7.70						8.95								19.77
19																
20																
21	0.58	8.12						2.04								19.68
22	1.02	7.81						3.26								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.45	8.20						2.41								19.13
35	2.20	7.92						5.86								19.85
51	2.45	8.20						12.91								19.48
52	3.93	8.37						22.07								19.50
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#169 5/ 9/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	1.91	8.07						8.29								
2	2.64	8.42						10.46								
3																0.40
4																
5	0.75	8.43						1.15								
6	2.76	7.99						4.30								19.27
7																19.43
8	3.28	7.74						6.16								
9	4.24	7.85						8.31								19.21
10	1.60	8.25						2.88								18.89
11																19.53
12	3.40	8.23						17.47								
13	2.31	8.03						10.03								1.73
14	3.22	8.26						4.01								19.36
15	2.44	8.24						10.00								19.10
16	1.89	8.48						4.73								19.48
17																
18	6.08	7.40						19.46								
19	3.06	7.75						3.78								19.82
20																19.27
21	0.76	8.31						2.16								
22	0.61	8.38						1.27								19.82
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.29	8.33						1.77								
35	2.54	7.88						6.09								19.23
51	3.91	8.32						22.48								19.84
52	3.98	8.43						23.69								19.97
53																19.56
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#170 5/16/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.23	7.94						9.57								0.40
2	1.48	8.09						5.29								18.93
3	3.71	7.83						9.97								19.29
4	2.07	8.11						5.23								19.23
5																19.35
6																
7																19.15
8																18.85
9																19.44
10																
11	0.97	8.32						1.95								19.31
12	1.65	8.39						6.72								19.07
13	2.48	7.92						11.22								19.44
14																
15																
16	1.13	8.35						2.91								19.32
17																19.19
18	5.78	7.58						18.04								
19																19.89
20																
21	0.65	8.20						2.22								
22	0.44	8.14						0.86								
23	0.99	7.89						1.45								
24	1.69	7.70						1.92								
25																
26																20.64
27																19.68
28																
29																20.19
30																19.69
31																18.83
32																
33	1.24	8.12						1.77								18.67
34																19.28
35																19.76
51	3.50	8.43						18.19								19.46
52	3.11	7.96						18.04								19.47
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#171 5/23/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.60	6.25	19.62	9.56	4.13	0.26	33.57	14.65		5.26	14.42	34.33	0.93	0.02	2236.	
2	2.50	8.07	14.67	9.75	3.75	0.24	28.41	10.36		5.05	12.86	28.27	0.05	0.03	1881.	0.63
3																
4																
5	0.75	7.93	3.77	3.42	1.18	0.18	8.55	1.37		5.61	1.26	8.24	0.26	0.91	628.	
6	2.67	7.56	12.64	17.73	6.89	0.36	37.62	4.58		7.33	25.40	37.31	6.00	0.05	2573.	
7																
8	3.01	7.75	20.30	15.35	5.57	0.27	41.49	5.81		7.74	26.49	40.04	0.85	0.02	2803.	
9	3.87	7.79	28.52	17.16	8.25	0.30	54.23	8.25		8.20	37.79	54.24	0.05	0.01	3719.	
10	1.43	7.91	9.84	5.40	2.67	0.11	18.02	2.72		9.38	6.16	18.26	4.08	0.10	1336.	
11																
12	2.28	8.31	16.52	8.27	3.34	0.23	28.36	9.33		5.38	13.01	27.72	2.19	0.01	1879.	19.37
13	2.31	7.91	17.49	7.27	2.86	0.16	27.78	10.74		3.55	12.49	26.78	7.16	0.01	1786.	
14	2.54	7.63	17.76	12.66	3.19	0.12	33.73	5.41		11.68	14.99	32.08	0.17	0.01	2330.	19.26
15	2.79	8.27	15.30	14.22	5.45	0.17	35.14	8.97		7.93	19.57	36.47	0.08	0.01	2451.	
16	1.34	8.14	8.20	4.82	1.80	0.08	14.90	3.47		5.39	5.87	14.73	2.94	0.01	1044.	
17																
18	5.82	7.47	28.82	24.14	14.83	0.74	68.53	18.99		12.42	38.11	69.52	0.34	0.01	4617.	19.23
19	2.69	7.67	17.49	10.06	4.55	0.12	32.22	4.45		10.58	18.84	33.87	8.46	0.01	2372.	
20																
21	0.63	8.98	4.95	0.69	0.46	0.19	6.29	1.99	0.50	0.83	2.73	6.05	0.05	0.01	408.	19.96
22	0.59	8.15	2.94	2.24	0.80	0.11	6.09	1.26		2.15	2.69	6.10	1.00	0.04	432.	
23																19.14
24																19.59
25	3.56	7.67	26.37	11.30	5.22	0.33	43.22	20.62		3.61	20.46	44.69	0.08	0.01	2843.	
26	5.36	7.88	50.63	8.49	5.34	0.36	64.82	11.13		7.07	49.55	67.75	0.18	0.01	4619.	
27																
28	3.60	8.20	25.75	7.30	3.64	0.12	36.81	14.44		3.54	19.88	37.86	5.27	0.01	2470.	
29	1.44	7.83	9.41	4.97	1.73	0.34	16.45	5.69		3.28	7.13	16.10		0.04	1095.	
30	3.51	7.93	19.18	17.52	9.29	0.38	46.37	5.10		9.89	33.31	48.30	0.08	0.02	3304.	
31	5.65	7.24	38.40	14.45	9.31	0.56	62.72	46.66		9.06	9.99	65.71	0.10	0.01	3994.	
32																
33	1.43	7.93	6.93	6.05	2.90	0.26	16.14	2.42		8.97	4.81	16.20	0.06	0.01	1190.	19.27
35	2.50	7.70	18.54	8.05	4.08	0.27	30.94	6.46		9.60	15.56	31.62	0.02	0.01	2210.	
51	3.67	8.27	19.20	15.22	6.39	0.36	41.17	21.44		4.01	17.12	42.57	0.15	0.02	2665.	19.54
52	3.73	8.06	24.86	13.60	6.26	0.38	45.10	23.00		3.32	16.86	43.18	0.37	0.07	2763.	19.51
53	3.45	7.94	20.20	13.72	5.95	0.33	40.20	22.68		2.78	13.64	39.10	0.05	0.28	2453.	
54	2.05	8.02	15.41	3.52	2.78	0.26	21.97	13.44		3.73	4.48	21.65	0.05	0.03	1380.	
55	3.23	7.88	18.44	10.30	5.04	0.34	34.12	20.67		1.52	13.27	35.46	0.07	0.02	2168.	
56																
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58																
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Appendix A (Continued).

WEEK#172 5/30/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.55	8.21						11.29								
2	2.44	8.23						9.64								0.45
3	3.57	7.99						8.79								18.96
4	2.30	7.84						5.78								19.31
5	0.60	7.96						0.90								19.27
6	2.60	7.64						3.57								19.40
7	1.88	7.99						4.57								19.60
8	2.78	7.66						5.23								19.19
9	3.10	7.68						6.08								18.88
10	1.14	7.96						2.17								19.63
11	1.14	7.99						1.85								19.39
12	2.09	8.03						9.11								
13	2.34	7.95						10.73								19.30
14	1.97	7.81						3.10								19.11
15	1.98	8.07						5.77								19.47
16	1.46	8.20						4.85								
17																
18	5.20	7.47						13.16								19.27
19	2.65	7.74						4.83								19.22
20	2.95	8.17						6.82								19.68
21	0.64	8.64						1.72								20.03
22	0.49	8.13						1.02								
23	1.28	8.20						1.94								19.16
24	1.71	7.73						1.74								19.64
25																
26																
27																
28																
29																
30																
31																
32																
33	1.28	8.05						1.66								19.29
35	2.22	7.79						5.36								19.79
51	3.56	7.60						17.81								19.48
52	3.90	7.59						23.64								19.50
53																
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Appendix A (Continued).

WEEK#173 6/ 6/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.45	8.26	16.45	8.82	3.56	0.28	29.11	11.11		3.42	13.48	28.01	0.51	0.01	1859.	
2	2.38	8.43	15.05	9.76	3.50	0.26	28.57	9.99	0.64	2.70	14.83	28.16	0.04	0.01	1845.	0.60
3																
4																
5	0.82	8.84	3.34	4.49	1.34	0.23	9.40	1.87	1.04	5.70	1.12	9.71	0.06	0.04	691.	19.43
6	2.29	8.30	9.18	14.42	5.28	0.36	29.24	3.38		5.04	19.42	27.84	0.40	0.01	1938.	19.51
7	2.03	8.31	10.54	10.31	5.61	0.27	24.73	4.44	0.29	5.81	14.16	24.70	0.54	0.01	1704.	19.87
8	2.76	8.32	17.99	14.63	5.11	0.34	38.07	5.43	0.86	5.21	25.55	37.05	0.29	0.01	2546.	19.25
9	3.64	8.38	24.89	10.69	7.58	0.35	49.51	6.44	0.83	7.07	34.96	49.30	0.05	0.01	3376.	18.93
10	1.40	8.48	9.35	5.95	2.28	0.09	17.67	2.37	1.18	6.88	7.00	17.43	1.53	0.02	1241.	19.55
11	1.19	8.24	6.42	5.94	1.33	0.12	13.81	2.14		4.96	6.85	13.95	3.13	0.02	995.	19.50
12	1.80	8.71	12.39	7.03	2.64	0.22	22.28	7.51	0.68	4.52	10.10	22.81	0.97	0.01	1514.	
13	2.12	8.49	13.37	8.75	2.77	0.25	25.14	8.39	0.84	3.58	12.28	25.09	2.96	0.01	1657.	19.59
14	2.11	8.38	16.18	10.17	2.50	0.16	29.01	3.97	0.53	7.27	16.55	28.32	0.06	0.01	2008.	19.30
15	2.99	8.06	18.55	15.29	5.67	0.24	39.75	9.00		5.54	24.67	39.21	0.05	0.01	2653.	19.56
16	1.25	8.75	7.83	4.59	1.63	0.15	14.20	3.38	1.04	4.40	5.83	14.65	0.87	0.01	997.	
17																
18	5.13	8.11	24.89	29.53	14.95	0.80	65.17	14.13		7.00	46.47	67.60	0.27	0.01	4437.	19.53
19	3.00	8.22	25.24	7.34	3.34	0.14	36.06	8.25		10.14	20.98	37.37	0.82	0.01	2621.	19.23
20	2.39	8.07	15.83	11.53	4.18	0.14	31.68	5.32		6.88	18.11	30.31	87.60	0.01	2129.	19.84
21	0.60	8.32	4.67	0.82	0.57	0.21	6.27	2.04		1.74	2.48	6.26	1.75	0.01	437.	20.17
22	0.36	8.39	2.08	1.75	0.58	0.09	4.50	0.75		2.24	1.66	4.65	0.75	0.08	336.	
23	1.21	8.50	6.93	5.80	1.53	0.11	14.47	2.10	1.16	3.90	7.60	14.76	65.20	0.01	1012.	19.25
24	1.57	8.33	7.96	10.09	2.17	0.47	20.69	2.20	0.88	4.54	13.70	21.32	3.25	0.01	1469.	19.75
25	2.79	8.24	19.40	8.60	3.80	0.63	31.83	14.62		3.12	14.28	32.02	0.34	0.01	2084.	20.51
26	5.01	8.81	56.37	6.63	5.54	0.42	68.96	11.13	1.40	5.66	53.33	71.52	0.04	0.02	4856.	19.69
27																
28	2.48	8.34	18.55	5.80	2.65	0.22	27.22	11.57	0.36	2.44	14.36	28.73	0.76	0.01	1843.	19.98
29	2.28	7.92	15.92	7.17	2.77	0.43	26.29	9.21		4.15	14.01	27.37	0.02	0.01	1813.	19.53
30	2.44	8.17	14.61	13.15	6.52	0.32	34.60	3.21		5.74	25.89	34.84	0.05	0.01	2399.	18.73
31	5.44	8.01	42.24	12.45	8.13	0.73	63.55	47.20		6.72	12.07	65.99	0.08	0.01	4011.	
32																18.62
33	1.01	8.55	6.30	5.83	2.34	0.27	14.74	2.53	0.92	5.90	4.91	14.26	0.13	0.01	1014.	19.43
35	1.77	8.27	14.83	6.05	2.73	0.26	23.87	3.72		8.80	11.32	23.84	0.12	0.01	1718.	19.98
51	3.56	8.10	23.70	13.98	5.62	0.41	43.71	17.25		2.66	22.38	42.29	0.05	0.01	2758.	19.62
52	3.05	8.51	27.40	12.46	5.50	0.45	45.81	21.21	0.88	3.12	18.74	43.95	0.01	0.01	2833.	19.64
53	3.32	8.18	20.76	11.53	4.73	0.33	37.35	20.94		2.39	13.95	37.28	0.01	0.02	2337.	
54	2.07	8.61	14.45	8.96	2.73	0.25	21.39	12.94	0.47	3.35	4.89	21.65	0.02	0.01	1367.	
55	3.37	8.12	24.13	9.79	5.04	0.41	39.37	22.06		1.82	15.41	39.29	0.01	0.01	2461.	
56																
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Appendix A (Continued).

WEEK#174 6/13/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.32	8.14						10.21								
2	2.30	8.27						8.79								0.51
3																
4																
5	0.60	7.75						0.90								
6	2.34	7.70						3.54								
7																
8	3.30	7.95						9.36								10.17
9	2.97	8.04						5.37								18.87
10	1.32	8.10						2.28								
11																
12	1.45	8.17						7.08								
13	2.35	8.22						9.83								19.34
14	1.68	8.10						3.45								19.38
15	2.83	7.85						7.52								
16																
17																
18																
19	2.67	7.86						6.61								19.19
20																
21	0.61	7.91						1.85								20.15
22	0.90	8.26						3.23								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33																
34	1.61	8.01						3.83								
35	3.48	7.99						16.17								19.52
36	3.74	8.02						22.36								19.54
37																
38																
39																
40																
41																
42																
43																
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Appendix A (Continued).

WEEK#175 6/20/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1																
2																0.46
3																
4																19.37
5																19.37
6																19.44
7																19.66
8																19.22
9																18.90
10																19.51
11																19.44
12																
13																19.29
14																19.13
15																
16																
17																19.68
18																19.33
19																19.26
20																19.80
21																20.16
22																
23																19.20
24																19.65
25																
26																
27																
28																
29																
30																
31																
32																
33																19.33
34																
51																19.53
52																19.52
53																
54																
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Appendix A (Continued).

WEEK#176 6/27/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.69	7.57						13.77								
2	2.55	8.23						11.74								0.57
3	2.96	7.58						5.06								19.08
4	1.40	8.43						2.34								19.47
5																
6																
7																
8																
9																
10																
11																
12	2.10	8.61						8.78								
13																
14																
15																
16																
17																
18	5.68	7.48						18.00								19.37
19																
20																
21	0.66	8.27						2.01								20.24
22																
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	0.44	7.50						2.34								19.48
35																
51	3.91	7.96						23.79								19.67
52	3.26	8.07						20.62								19.68
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK 177 7/ 4/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.46	8.51						10.96								
2	2.34	8.47						8.68								0.47
3	3.35	7.83						5.09								18.98
4	1.39	8.73						2.83								19.37
5	0.56	8.10						0.69								19.36
6	1.39	7.76						1.75								19.47
7																
8	3.46	8.04						5.91								19.20
9	3.60	7.94						6.95								18.87
10	1.39	8.42						2.06								19.56
11																
12	1.85	8.60						0.96								
13	2.28	7.86						9.75								19.38
14	1.94	8.01						3.07								19.11
15	2.43	7.98						5.73								19.54
16	1.06	8.39						2.77								
17																
18	5.40	7.51						15.65								19.45
19	2.72	7.61						5.21								19.26
20	3.95	7.67						10.96								19.83
21																
22	0.58	8.36						1.15								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.29	8.44						1.80								19.37
35	1.48	8.06						2.41								19.96
51	3.56	8.47						17.48								19.59
52	3.88	8.15						22.66								19.60
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#178 7/11/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.66	8.52	17.77	8.44	3.45	0.26	29.92	11.40	0.48	4.58	13.27	29.73	4.95	0.01	1965.	
2	2.55	8.11	15.03	6.77	3.38	0.28	27.46	9.80		4.96	13.95	28.71	0.06	0.01	1893.	0.42
3	4.02	8.13	23.50	21.19	8.48	0.54	54.71	6.36		9.72	40.08	56.16	0.49	0.01	3833.	18.93
4	1.57	8.53	10.48	5.07	1.93	0.21	17.69	3.01	0.40	5.94	8.54	17.89	17.40	0.01	1265.	19.33
5	0.82	8.18	3.12	3.99	1.23	0.49	8.83	1.26		5.54	2.01	8.81	0.70	0.01	657.	19.31
6	2.11	7.84	8.50	14.17	4.08	0.33	27.08	2.55		9.52	14.53	27.60	0.51	0.01	1920.	19.39
7	2.21	8.25	11.80	11.66	4.07	0.30	27.83	3.27		7.82	15.30	28.39	0.17	0.01	1965.	19.62
8	3.94	8.04	23.21	19.85	7.31	0.40	50.77	7.37		8.44	37.48	53.29	0.55	0.03	3612.	19.14
9	4.25	8.13	27.95	17.12	7.36	0.40	52.83	8.28		8.70	38.29	55.24	0.12	0.01	3753.	18.83
10	1.51	8.25	9.86	8.72	2.50	0.12	19.20	2.26		9.38	7.27	18.92	2.50	0.01	1398.	19.47
11	1.29	8.07	6.29	6.11	1.26	0.15	13.81	2.34		4.94	6.56	13.84	16.70	0.01	988.	19.46
12	1.85	8.23	10.95	9.27	2.25	0.21	19.68	6.66		4.90	8.85	20.41	6.13	0.02	1373.	
13	2.27	8.64	13.82	7.53	2.68	0.27	24.30	8.00	0.76	5.08	11.56	25.40	15.90	0.01	1681.	19.37
14	2.10	8.14	14.59	9.10	1.99	0.13	25.81	3.76		10.92	12.49	27.17	0.25	0.01	1946.	19.08
15	3.24	8.08	18.86	14.66	5.48	0.27	39.07	7.70		8.10	25.90	41.70	0.05	0.01	2811.	19.49
16	1.13	8.29	6.66	3.79	1.36	0.14	11.95	2.91		4.40	4.85	12.16	4.10	0.01	856.	
17	1.70	7.94	9.28	5.48	1.98	0.56	17.30	4.37		0.74	9.37	17.48	3.45	0.01	1120.	19.73
18	6.45	7.85	37.35	30.69	15.95	0.96	84.95	19.52		8.60	61.00	89.12	0.76	0.04	5852.	19.45
19	2.60	8.24	19.92	9.10	4.61	0.22	33.85	6.37		10.10	18.69	35.16	0.23	0.03	2449.	19.18
20	4.43	8.15	32.20	18.36	7.80	0.16	58.52	13.26		8.18	39.04	60.48	28.40	0.03	4053.	19.73
21	0.76	8.25	5.00	1.48	0.68	0.23	7.39	2.12		1.80	3.57	7.49	0.17	0.02	516.	20.09
22	0.52	8.30	2.46	2.07	0.63	0.12	5.28	0.57		2.50	2.08	5.15	0.15	0.10	383.	
23	1.32	8.57	7.89	5.55	1.48	0.13	15.05	2.04	1.00	5.18	7.20	15.42	63.60	0.03	1080.	19.20
24	1.69	8.30	9.76	10.01	1.93	0.52	22.22	4.14		8.00	12.91	25.05	2.43	0.03	1653.	19.68
25	3.41	8.01	25.64	8.52	3.82	0.33	38.31	18.58		4.06	15.41	38.05	0.35	0.03	2460.	20.41
26	5.63	8.27	54.56	7.00	5.06	0.41	67.03	13.77		6.76	48.30	68.63	0.16	0.03	4693.	19.65
27																
28	2.92	8.31	21.51	6.80	2.90	0.25	31.46	13.07		2.82	15.56	31.45	0.94	0.03	2059.	20.03
29	1.37	8.10	8.47	4.39	1.44	0.46	14.76	5.04		3.10	6.82	14.96	0.06	0.03	1014.	19.58
30	2.28	8.22	14.44	12.02	3.27	0.29	32.02	2.48		10.00	18.74	32.22	0.16	0.03	2282.	18.68
31	5.81	8.27	38.78	12.97	7.24	0.63	59.62	38.26		9.56	12.91	60.73	0.36	0.03	3824.	
32																18.94
33	1.24	8.02	7.00	5.27	2.39	0.30	14.96	1.72		6.88	6.10	14.77	0.25	0.03	1084.	19.30
35	1.43	8.08	11.23	3.99	1.76	0.25	17.23	1.95		9.50	5.58	17.03	0.31	0.03	1286.	19.87
51	3.62	7.97	23.37	13.12	5.25	0.47	42.21	19.52		5.54	18.27	43.33	0.26	0.04	2790.	19.50
52	4.17	8.30	26.88	12.23	5.44	0.55	45.10	25.51		3.88	17.59	46.98	0.45	0.01	2937.	19.52
53	4.16	8.22	25.18	13.28	5.31	0.43	44.20	26.07		2.82	16.97	45.86	0.07	0.01	2838.	
54																
55	3.92	8.09	24.80	10.43	4.96	0.36	40.55	22.58		1.50	15.72	39.80	0.23	0.11	2500.	
56																
57																
58																
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Appendix A (Continued).

WEEK#179 7/18/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.26	7.70						9.54								
2	1.96	8.26						7.25								0.89
3																
4																
5																
6																
7																
8																
9																
10																
11																
12	2.16	8.15						9.13								
13	1.98	8.05						7.03								19.31
14																
15																
16	1.11	8.20						3.05								
17																
18	3.63	7.80						9.78								19.39
19																
20																
21																
22	0.56	8.29						0.70								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
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46																
47																
48																
49																
50																
51	1.36	8.17						2.18								
52	1.21	8.34						1.70								19.99
53	3.34	7.97						13.81								19.65
54	3.66	8.02						21.64								19.65
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#180 7/25/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.76	8.18						11.64								
2	2.52	8.02						9.26								
3																
4																
5	0.61	7.76														
6	2.05	8.26														C 37
7								0.80								
8	2.67	8.18						2.16								
9																19.38
10	1.39	8.27						4.19								19.37
11																
12	1.99	8.26						1.78								19.21
13																18.88
14	1.53	8.52						6.61								19.95
15	3.29	7.72														
16								2.51								
17								7.66								
18																
19	2.95	8.06														19.09
20																19.51
21	0.67	7.88						6.40								
22	1.14	8.50														
23								1.73								
24								2.81								
25																19.27
26																19.65
27																
28																
29																
30																
31																
32																
33																
34																
35	1.30	8.17														
51	5.63	8.26														
52	3.92	7.95						1.61								
53								14.00								
54								19.82								
55																19.82
56																19.82
57																19.81
58																
59																
60																

Appendix A (Continued).

WEEK#181 8/ 1/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.32	8.70						7.53								
2	1.64	7.68						5.26								
3																0.48
4	1.42	8.61						2.86								
5	1.19	8.14						1.51								19.33
6	2.42	8.07						2.67								19.28
7	1.99	8.12						4.04								19.35
8	3.11	7.76						5.33								19.54
9	3.87	8.04						6.02								19.16
10																18.83
11	1.41	7.76						1.99								
12	2.33	7.97						7.75								19.47
13	1.97	8.33						4.37								
14	2.16	8.29						3.88								19.34
15	3.64	7.98						8.11								19.05
16	1.26	8.65						3.79								19.42
17	1.43	8.01						5.78								
18	2.60	7.68						5.83								19.51
19																19.47
20	3.76	8.02						9.58								
21																19.63
22	0.66							0.96								19.62
23	1.72	8.45						2.05								
24	1.73	8.48						1.74								19.26
25																19.59
26																
27																
28																
29																
30																
31																
32																
33	1.45	7.99						2.29								
35	1.64	8.36						2.01								19.16
51	3.75	8.40						13.14								19.72
52	4.14	8.62						22.41								19.44
53																19.46
54																
55																
56																
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58																
59																
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Appendix A (Continued).

WEEK#182 8/ 8/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.46	8.63	19.46	8.71	3.74	0.22	32.18	11.32	0.92	4.10	16.55	32.89	4.02	0.03	2150.	0.28
2	2.35	8.32	15.99	10.21	3.64	0.26	31.10	11.07		5.96	14.57	31.60	0.28	0.04	2082.	
3										7.47	4.01	13.04	74.42	0.02	998.	19.17
4	1.12	8.24	8.42	3.68	1.68	0.16	13.94	1.56		5.00	2.87	9.11	1.58	0.44	671.	19.31
5	0.70	8.05	3.82	3.66	1.04	0.26	8.78	1.24		6.70	19.99	30.47	0.51	0.05	2098.	19.39
6	2.06	7.87	9.83	15.42	3.97	0.31	29.53	3.78		5.19	14.37	24.72	0.17	0.02	1719.	18.98
7	1.96	8.44	11.71	10.40	3.63	0.29	26.03	4.40	0.76	6.74	34.35	46.80	1.45	0.03	3183.	19.20
8	3.16	8.03	21.48	16.70	6.34	0.37	44.89	5.71		7.22	27.59	40.72	0.30	0.03	2798.	18.87
9	2.82	7.98	20.55	13.99	5.27	0.30	40.01	5.81		8.00	5.39	14.64	5.79	0.03	1098.	19.48
10	1.18	8.14	7.22	5.61	2.18	0.04	15.05	1.25								
11										4.68	13.32	28.77	7.24	0.03	1886.	
12	2.20	8.00	15.09	9.02	3.45	0.25	27.81	10.77		7.30	8.31	18.90	46.14	0.03	1372.	19.33
13	2.79	8.12	10.67	6.46	2.32	0.21	19.66	3.29		8.94	8.48	19.81	2.63	0.02	1471.	19.01
14	1.57	8.16	11.86	6.85	1.57	0.11	20.39	2.39		8.88	15.30	29.31	1.32	0.03	2086.	19.47
15	1.63	8.32	17.54	9.00	2.97	0.21	29.72	5.13								
16																
17																
18										9.54	15.61	29.61	1.09	0.03	2083.	19.29
19	2.23	8.36	15.77	9.25	3.46	0.17	28.65	3.86	0.60	7.16	31.23	47.86	0.27	0.02	3228.	19.58
20	2.17	7.66	22.44	18.13	5.77	0.16	46.50	9.47		1.98	3.96	9.22	0.05	0.02	616.	19.52
21	0.86	8.25	5.95	1.44	1.23	0.22	8.84	3.28		3.66	3.12	7.66	0.04	0.22	564.	
22	0.58	7.87	3.66	2.97	0.89	0.14	7.66	0.88								
23																
24										2.90	15.09	30.85	0.06	0.02	1990.	21.11
25	2.55	8.33	18.89	7.55	3.20	0.23	29.87	12.58	0.28	6.46	48.02	66.19	0.11	0.04	4490.	19.52
26	5.06	8.01	52.54	6.38	4.91	0.37	64.20	10.71								
27										2.98	16.86	26.02	0.85	0.02	1780.	20.08
28	2.28	8.68	16.81	7.03	2.97	0.22	27.93	5.74	0.44	3.02	8.33	16.85	0.04	0.04	1137.	19.86
29	1.21	7.97	9.72	4.99	1.75	0.33	16.79	5.50		8.31	9.58	20.87	1.01	0.03	1469.	18.68
30	1.41	8.21	6.75	9.54	3.23	0.28	19.80	2.98		8.80	13.12	63.14	0.29	0.02	3939.	
31	4.76	7.79	42.00	11.78	7.01	0.61	61.40	41.22								18.40
32										7.88	7.68	18.19	0.81	0.03	1321.	19.05
33	1.25	8.15	9.01	6.50	2.38	0.31	18.20	2.63		6.86	4.73	14.83	0.07	0.01	1078.	19.59
34	1.02	8.55	9.05	4.30	1.82	0.21	15.38	1.86	1.38	3.04	20.61	30.51	0.40	0.03	2063.	19.46
35	2.71	7.97	19.35	6.69	4.24	0.37	30.65	6.86		3.94	18.95	44.94	0.16	0.02	2891.	19.46
51	3.36	8.15	27.72	12.11	5.20	0.41	45.44	22.05								
52										3.21	3.64	19.67	0.02	0.07	1244.	
53										1.88	16.03	36.94		0.03	2345.	
54	1.72	7.78	13.54	3.40	2.53	0.22	19.69	12.82								19.29
55	2.73	7.94	21.80	10.80	4.62	0.32	37.54	19.03								
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#183 8/15/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1																
2																
3																0.26
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
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58																
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Appendix A (Continued).

WEEK#184 8/22/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.61	8.42						11.07								
2	2.55	8.15						9.32								
3																0.24
4																
5	0.63	8.47						1.04								
6	2.15	7.52						2.34								19.17
7	2.14	7.99						4.21								19.24
8	2.58	7.78						4.29								19.10
9	3.54	7.82						5.24								19.07
10	0.98	7.87						1.60								18.75
11	1.15	7.65						2.04								19.35
12	2.62	8.55						11.87								19.30
13	1.86	8.58						4.94								
14	1.79	7.86						2.49								19.18
15	3.09	8.23						7.23								18.97
16	1.40	7.98						4.11								19.34
17	1.20	8.24						4.41								
18																19.42
19	2.53	7.55														
20	3.43	7.33						4.25								19.07
21	0.82	8.25						8.74								19.49
22	0.82	8.39						2.31								19.58
23	1.59	8.11						1.67								
24	1.54	8.07						1.54								19.08
25								1.67								19.44
26																
27																
28																
29																
30																
31																
32																
33																
35	1.28	8.03						1.90								
51	2.82	8.48						9.23								19.87
52	3.84	8.11						19.84								19.32
53																19.33
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#185 8/29/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.64	8.44						12.62								
2	2.48	8.15						10.47								0.27
3																
4	0.98	8.34						0.40								19.11
5	0.79	7.99						1.15								19.18
6	2.18	7.77						2.70								19.23
7																
8	2.71	7.71						4.46								19.08
9	3.47	8.15						5.17								18.83
10																
11																
12	2.32	8.50						10.23								
13	1.89	8.21						6.59								19.17
14	3.12	7.88						2.63								18.97
15	2.00	8.11						7.31								19.33
16																
17																
18																
19																
20																
21	0.83	8.35						2.63								19.57
22	0.75	8.47						1.02								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.16	8.27						1.93								18.99
35	1.16	8.27						1.93								19.55
51	2.78	7.94						6.36								19.31
52	3.94	8.11						23.29								19.32
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#186 9/ 5/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.45	8.50						10.71								
2	2.36	7.79						10.11								
3																19.31
4																19.32
5	0.78	8.13						1.20								
6	1.91	7.92						2.22								19.22
7								3.88								
8	2.18	7.95														19.06
9								1.30								19.57
10	0.92	8.43						2.13								
11	1.22	8.48						9.99								
12	2.15	8.30						16.70								19.03
13	2.81	7.84						2.66								19.44
14	1.70	8.57						5.64								
15	2.51	8.27														
16																
17								3.42								19.19
18	1.53	7.67						5.21								19.53
19	2.25	8.11						7.56								19.55
20	3.00	7.64														
21								1.18								19.30
22	0.68	8.66						1.42								19.59
23	1.53	8.26						2.00								
24	1.42	8.34														
25																
26																
27																
28																
29																
30																
31																
32																
33								1.63								19.87
35	1.06	8.37						6.90								19.32
51	2.75	7.89						20.61								19.19
52	3.68	8.43														
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#187 9/12/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.57	8.13						14.53								
2	2.34	8.36						8.98								19.31
3																19.37
4								1.12								
5	0.78	7.77						2.32								18.90
6	1.95	7.72														
7								4.15								19.53
8	2.31	8.08														
9								1.54								
10	1.24	7.74														
11																19.12
12																19.48
13								2.05								
14	1.33	8.15						6.49								
15	2.87	7.92														
16																19.34
17								10.36								
18	2.95	7.37						3.16								19.64
19	1.67	7.87														
20								3.31								
21	0.87	8.16						1.89								
22	1.00	7.81														
23																19.65
24								12.37								
25	2.54	7.67						10.50								20.12
26	4.85	8.52														19.84
27								11.06								18.77
28	2.51	8.12						2.87								
29	2.46	7.97						2.87								18.41
30	1.90	7.72														19.14
31																19.88
32								2.25								19.44
33	1.38	7.99						1.59								19.44
35	1.10	7.92						6.93								
51	2.80	7.64						21.73								
52	3.70	7.94														
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#188 9/26/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.31	8.30	17.42	6.99	4.11	0.24	30.76	11.56		5.20	12.49	29.25	2.59	0.01	1967.	
2	1.97	8.29	15.58	7.71	3.44	0.22	26.95	8.39		6.13	12.02	26.54	0.76	0.01	1812.	0.36
3	2.44	8.14	17.43	13.43	6.50	0.35	37.71	2.95		10.25	24.05	37.25	0.14	0.01	2648.	18.86
4	1.05	8.29	7.20	4.00	2.15	0.15	13.15	1.16		8.25	3.90	13.31	38.30	0.01	1009.	19.21
5	0.80	8.22	4.33	4.04	1.35	0.30	10.02	1.42		6.50	2.20	10.12	11.06	0.08	761.	19.27
6	1.08	8.14	4.78	5.00	2.34	0.21	13.33	1.42		5.00	6.85	13.27	0.24	0.01	951.	19.33
7	1.69	8.20	10.27	5.97	3.35	0.22	19.81	3.56		7.55	8.59	19.70	0.12	0.01	1404.	19.52
8	2.26	8.28	14.18	11.36	4.68	0.34	30.56	4.62		7.88	16.29	28.79	0.53	0.01	2051.	19.14
9	2.81	8.32	14.89	11.72	5.98	0.23	32.82	4.55		8.63	18.63	31.86	0.13	0.10	2244.	18.81
10	1.13	8.16	7.77	4.83	2.25	0.07	14.92	1.72		8.45	4.62	14.79	1.34	0.01	1104.	19.41
11	1.33	8.18	7.28	7.35	1.74	0.12	16.49	4.05		5.25	8.74	16.04	52.46	0.01	1153.	19.37
12	1.84	8.29	14.11	6.93	3.05	0.22	24.31	9.43		4.25	10.41	24.09	5.71	0.01	1603.	
13																
14	1.31	8.53	11.45	3.41	1.62	0.08	16.56	2.02	1.00	5.70	7.86	16.58	0.24	0.01	1181.	19.05
15	2.29	8.28	19.08	6.46	4.30	0.20	30.04	5.60		8.25	17.07	30.92	1.20	0.01	2150.	19.42
16	1.24	8.24	7.96	4.60	1.84	0.15	14.55	4.22		4.88	5.15	14.25	1.26	0.01	998.	
17	1.13	8.10	8.09	2.59	1.64	0.27	12.59	4.00		2.23	6.16	12.39	0.30	0.01	842.	19.71
18	2.79	8.13	16.96	10.23	5.64	0.89	33.72	5.38		6.38	20.82	33.03	0.03	0.01	2278.	19.59
19	1.94	8.27	17.24	4.97	4.01	0.18	26.40	4.67		8.88	13.06	26.61	0.54	0.06	1886.	19.14
20	2.87	8.23	18.99	12.15	5.82	0.14	37.10	7.40		8.63	23.73	39.76	0.06	0.01	2685.	19.60
21	0.96	8.25	6.10	2.12	1.88	0.24	10.34	3.87		1.50	4.60	9.97	0.05	0.01	665.	19.73
22	0.77	8.31	4.33	2.98	1.24	0.14	8.69	2.10		3.38	3.44	8.92	0.73	0.01	626.	
23	1.33	8.51	7.84	4.33	2.23	0.11	14.51	1.24	1.50	5.63	6.12	14.49	148.7	0.01	1029.	19.21
24	1.27	8.31	7.21	6.91	1.84	0.38	16.44	1.44		6.88	7.81	16.13	2.89	0.01	1187.	19.52
25	2.00	8.25	14.67	5.92	2.50	0.19	23.28	10.17		2.88	11.45	24.50	0.12	0.01	1580.	20.44
26	4.24	8.29	48.20	5.36	4.84	0.32	58.72	9.29		6.50	42.68	58.47	0.15	0.01	4063.	19.68
27																
28	2.39	8.25	18.18	7.54	2.88	0.21	28.82	9.03		3.55	15.20	27.78	2.34	0.01	1879.	20.03
29	2.48	8.27	18.70	8.78	3.52	0.37	31.37	11.33		4.63	15.46	31.42	0.07	0.01	2090.	19.94
30	1.69	8.13	3.95	7.68	4.17	0.21	16.01	2.69		6.88	7.03	16.60	0.05	0.01	1156.	18.71
31																
32																18.48
33	1.34	8.21	8.58	5.00	2.41	0.30	16.29	1.69		7.88	6.62	16.19	1.69	0.01	1197.	19.10
35	0.96	8.25	6.03	3.53	1.91	0.16	11.63	1.50		7.50	3.00	12.00	7.74	0.01	894.	19.70
1	2.36	8.40	19.17	7.17	4.44	0.28	31.76	7.72		7.38	16.45	31.55	0.10	0.01	2163.	19.42
2	3.11	8.45	21.76	9.94	4.63	0.32	36.65	19.04	0.20	3.38	15.61	38.23	0.14	0.06	2405.	19.44
3																
4	1.75	8.46	12.98	2.91	2.33	0.19	18.42	11.60	0.20	2.98	2.97	17.75	1.64	0.01	1134.	
5																
6																
7																
8																
9																
60																

Appendix A (Continued).

WEEK#189 10/ 3/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.36	8.18						9.97								
2	2.00	8.14						6.93								
3	2.96	7.36						3.32								
4	1.02	8.13						0.99								18.77
5	0.94	7.92						1.55								19.12
6	1.75	7.44						2.20								19.01
7	2.17	7.92						4.68								19.24
8	2.73	7.79						4.68								19.40
9	2.18	8.53						2.63								19.09
10																19.07
11	4.19	7.94						1.84								
12	2.17	8.07						8.98								19.27
13																
14	1.41	7.91						2.32								
15	3.30	7.94						6.54								18.98
16	1.59	7.86						3.78								19.33
17																
18	3.62	7.52						8.75								19.69
19																19.61
20	2.70	7.87						5.63								
21	1.05	8.14						3.48								19.51
22	0.82	8.18						1.49								19.58
23	1.68	8.45						2.38								
24	1.21	7.82						1.43								19.08
25																19.44
26																
27																
28																
29																
30																
31																
32																
33	1.38	8.22						2.56								
35																19.08
51	3.07	8.09						8.98								
52	3.82	8.01						20.90								19.62
53																19.23
54																
55																
56																
57																19.15
58																19.00
59																
60																

Appendix A (Continued).

WEEK#190 10/10/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.71	8.18						11.52								
2	2.46	8.42						9.77								
3	2.94	8.38						3.44								0.37
4	1.16	8.79						1.41								18.87
5	1.16	8.79						1.41								19.19
6	1.75	8.40						2.67								19.32
7	2.33	8.19						4.77								19.43
8	1.95	8.51						2.92								19.52
9	3.23	8.35						4.07								19.23
10	1.13	8.83						1.66								18.96
11	1.40	8.69						1.35								19.44
12	1.04	8.41						5.32								19.36
13																
14	1.56	8.51						2.73								
15	1.82	8.65						5.49								18.79
16	1.69	8.70						5.34								19.45
17	1.86	8.45						7.68								
18	4.87	8.05						11.26								19.60
19	2.36	8.37						3.31								19.39
20	3.06	8.34						5.95								19.32
21	1.49	8.52						4.51								19.61
22	1.00	8.49						1.60								19.74
23	1.53	8.48						1.57								
24	1.63	8.52						1.58								19.21
25																19.48
26																
27																
28																
29																
30																
31																
32																
33	1.59	8.48						2.19								
34																19.08
51	2.82	8.47						8.01								
52	3.34	8.45						17.72								19.52
53																19.12
54																
55																
56																
57																
58																
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Appendix A (Continued).

WEEK#191 10/17/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.17	8.16						8.70								18.80
2	2.48	8.38						8.63								19.08
3	3.11	7.72						2.95								19.13
4	1.26	8.54						1.61								19.13
5	1.23	7.90						1.87								19.37
6	1.63	8.45						1.42								18.77
7	2.36	7.86						4.88								18.76
8	2.07	8.48						3.47								19.43
9	3.22	8.01						4.10								19.33
10	1.28	8.47						1.70								
11	1.39	7.92						2.78								
12	2.57	8.35						10.05								18.71
13	1.72	8.07						3.18								19.35
14	1.66	8.48						2.26								
15	2.20	8.22						5.91								19.52
16	0.91	8.31						3.28								
17	1.76	7.95						6.77								19.12
18																19.48
19	2.57	8.31						4.37								19.43
20	2.96	7.89						5.64								
21	1.33	8.05						4.11								19.18
22	0.900	8.06						1.33								19.49
23	1.29	8.23						1.65								
24																
25																
26																
27																
28																
29																18.90
30																
31								2.10								
32	1.47	8.53						9.94								19.34
33	2.50	8.12						8.42								19.35
34	1.90	8.13						22.50								
35	3.93	8.42														
36																
37																
38																
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Appendix A (Continued).

WEEK#192 10/24/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.09	8.17	16.77	8.86	3.78	0.27	29.68	10.28		5.18	13.64	29.10	1.07	0.12	1955.	
2																0.23
3	2.15	8.08	15.80	15.79	5.98	0.37	37.94	2.90		10.20	23.60	36.78	0.06	0.05	2625.	18.78
4	1.00	8.62	8.20	4.00	2.65	0.15	15.00	1.12	1.90	7.38	4.37	14.77	9.25	0.05	1064.	18.79
5	0.57	8.38	3.51	3.25	1.08	0.24	8.08	0.46		5.58	1.62	7.66	0.90	0.05	603.	19.16
6	1.20	8.17	7.52	8.14	2.83	0.26	18.75	2.21		6.19	6.97	18.37	0.07	0.05	1315.	19.16
7	1.74	7.87	13.16	9.54	4.07	0.20	26.97	2.71		6.30	17.38	26.39	0.06	0.05	1866.	19.51
8	1.73	8.49	14.60	12.22	4.35	0.43	31.60	5.52	1.82	7.20	16.40	30.94	0.20	0.05	2127.	18.80
9	1.83	7.85	9.01	9.73	4.29	0.82	20.85	5.58		7.88	7.88	21.34		0.23	1467.	18.42
10	0.90	8.49	7.42	3.26	1.21	0.08	11.97	1.41	1.20	6.90	2.08	11.59	0.55	0.06	861.	19.29
11	0.87	8.26	5.69	4.07	1.26	0.09	11.11	0.27		5.34	5.12	10.73	20.86	0.05	813.	19.32
12	1.96	8.01	13.00	10.03	3.95	0.26	27.24	9.22		4.24	12.23	25.69	3.26	0.05	1731.	
13																
14	1.36	7.98	11.68	4.88	1.71	0.14	18.41	1.48		7.68	8.33	17.89	0.34	0.06	1328.	18.95
15	1.98	8.43	19.64	5.75	3.91	0.43	29.53	9.46	1.32	5.17	13.84	29.79	1.06	0.05	1978.	19.29
16	0.89	8.36	8.21	4.07	1.52	0.11	13.91	4.61	0.44	4.40	4.37	13.82	0.19	0.07	948.	
17	1.16	8.30	8.17	3.00	2.34	0.16	13.67	4.54		2.63	6.42	13.59	0.96	0.05	912.	19.62
18																19.55
19	2.18	8.29	16.07	9.59	3.66	0.36	29.68	2.59		12.20	13.84	28.63	0.60	0.13	2121.	19.06
20	1.89	8.49	10.88	8.54	2.48	0.13	22.03	4.85	1.30	7.15	8.12	21.42	1.66	0.16	1494.	19.49
21	0.99	8.17	7.18	3.44	2.40	0.22	13.24	4.30		2.30	6.12	12.72	0.11	0.06	858.	19.61
22																
23	1.17	8.54	8.12	6.18	1.78	0.08	16.16	3.45	1.16	6.22	4.68	15.51	124.4	0.07	1097.	19.14
24	1.47	8.24	8.94	9.27	2.09	0.04	20.34	1.66		6.58	11.24	19.48	13.21	0.05	1418.	19.47
25	2.80	8.09	20.11	7.75	3.47	0.20	31.53	10.83		3.02	17.18	31.03	0.13	0.05	2061.	20.37
26	3.96	8.16	38.88	5.15	4.90	0.35	49.28	8.09		6.14	37.27	51.50	0.13	0.05	3522.	19.62
27																
28	2.18	8.09	20.18	6.80	2.92	0.16	30.06	8.78		3.16	14.68	29.60	0.08	0.01	1851.	19.97
29	2.15	8.04	20.08	9.31	3.14	0.36	29.96	9.92		5.38	16.56	28.86	0.44	0.01	2069.	19.55
30	3.23	7.85	19.49	21.86	10.89	0.40	52.64	6.00		7.88	38.34	53.22	0.16	0.01	3569.	18.62
31																
32																18.39
33	1.31	8.34	8.30	5.68	2.23	0.29	16.50	2.82	0.86	6.64	6.24	16.56	0.16	0.01	1174.	18.98
35	1.19	8.41	6.66	4.76	1.83	0.15	13.40	1.22	0.84	6.98	3.96	13.00	1.04	0.01	961.	19.56
51	3.07	8.62	10.80	15.42	6.53	0.38	33.13	9.03	1.06	6.86	15.72	32.67	0.14	0.04	2177.	19.34
52	3.07	8.62	10.80	15.42	6.53	0.38	33.13	9.03	1.06	6.86	15.72	32.67	0.14	0.04	2177.	19.28
53	1.54	8.14	13.33	12.65	4.91	0.33	31.22	15.46		2.76	12.54	30.76	0.24	0.06	1951.	
54	1.54	8.23	12.00	3.48	2.64	0.17	18.29	9.03		1.22	5.36	17.61	0.02	0.06	1158.	
55	3.69	7.62	25.22	10.07	5.00	0.36	40.65	25.55		1.36	13.64	40.55	0.02	0.07	2500.	
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#193 10/31/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.10	8.33						10.57								
2	2.68	8.33						8.95								0.25
3	2.91	7.95						4.00								18.80
4	1.35	8.36						2.54								19.10
5	1.03	8.69						2.40								19.17
6	1.93	7.80						3.64								19.55
7	2.68	7.46						4.92								19.44
8	3.18	7.82						5.52								19.08
9	3.27	8.00						5.17								18.79
10	1.42	8.05						2.21								19.31
11	1.35	8.24						2.56								19.40
12	3.06	7.91						13.29								
13																
14	1.83	8.36						2.24								
15	3.02	8.22						8.96								18.98
16	1.19	8.15						5.17								19.30
17	1.51	8.28						6.29								
18	5.39	7.41						10.57								19.66
19	3.06	7.81						6.69								19.39
20	2.94	7.82						5.18								19.08
21	2.37	7.79						5.81								19.50
22	1.04	8.42						1.92								19.53
23	1.34	8.14						1.51								
24	1.82	7.82						2.44								19.18
25																19.52
26																
27																
28																
29																
30																
31																
32																
33	1.42	8.56						2.36								
34	1.44	8.10						2.49								18.98
51	2.54	8.20						6.46								19.58
52	3.95	8.22						20.49								19.64
53																19.67
54																
55																
56																
57																
58																
59																
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Appendix A (Continued).

WEEK#194 11/ 7/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.33	8.35						9.34								
2	2.45	8.55						8.99								0.30
3	2.76	8.24						3.56								18.83
4	1.41	8.30						2.28								19.14
5	0.91	8.69						1.37								19.23
6	2.13	7.89						2.78								19.27
7	2.43	8.30						5.69								19.44
8	3.32	8.15						6.02								19.11
9	3.03	8.26						3.09								18.80
10	1.22	8.43						1.66								19.39
11	1.72	8.49						2.65								19.41
12	1.92	8.41						6.63								
13																
14	1.73	8.56						2.43								
15	3.18	8.00						9.17								19.01
16	1.49	8.42						5.44								19.33
17	1.42	8.56						4.89								
18	5.13	7.67						9.71								19.52
19	2.90	8.01						5.41								19.44
20	2.67	8.13						5.48								19.12
21	1.51	8.20						3.93								19.58
22	0.80	8.50						1.18								19.54
23	1.67	8.23						1.53								
24	1.65	8.40						1.73								19.22
25																19.55
26																
27																
28																
29																
30																
31																
32																
33	1.43	8.16						2.15								
34	1.19	8.34						1.67								19.04
35	2.95	8.39						8.99								19.62
36	1.33	8.49						22.47								19.38
37																19.57
38																
39																
40																
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Appendix A (Continued).

WEEK#195 11/14/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.79	8.50						11.15								0.30
2	2.58	8.21						9.22								18.83
3	2.99	8.40						3.47								19.12
4	1.68	8.29						2.83								19.19
5	0.98	9.05						1.26								19.28
6	2.50	8.76						2.09								19.45
7	2.46	8.64						5.01								19.15
8	3.36	8.62						5.98								18.79
9	3.27	8.81						3.15								19.36
10	1.28	9.08						1.40								19.40
11	1.31	8.63						1.55								
12	2.29	8.72						8.16								19.00
13																19.35
14	1.76	9.01						2.32								
15	3.19	8.71						8.65								19.48
16	1.34	8.91						3.44								19.39
17	1.51	8.88						5.25								19.13
18	4.98	8.54						7.85								19.54
19	2.49	8.77						3.94								19.47
20	2.54	8.71						3.94								
21	1.23	8.66						3.31								19.26
22																19.58
23	1.26	8.99						1.17								
24	1.67	8.97						1.59								
25																
26																
27																
28																
29																
30																19.04
31																19.54
32								1.86								19.37
33	1.27	8.90						1.48								19.39
35	1.13	8.88						9.18								
51	3.09	8.60						22.47								
52	3.93	8.75														
53																
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Appendix A (Continued).

WEEK#196 11/21/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1																
2	2.11	8.27	15.39	9.10	3.28	0.23	27.91	9.19		6.98	12.60	27.77	0.29	0.01	1942.	0.25
3	2.26	7.97	14.82	11.08	5.15	0.28	31.33	2.84		8.76	19.41	31.01	0.08	0.01	2204.	18.80
4	2.07	8.29	11.68	8.80	5.44	0.24	26.16	5.10		8.21	12.60	25.91	0.78	0.01	1807.	19.14
5	0.91	8.13	4.98	3.86	1.21	0.28	10.33	1.44		6.70	2.27	10.41	0.44	0.33	786.	19.17
6	2.40	7.65	10.06	17.34	5.84	0.35	33.59	2.91		6.78	23.94	33.63	0.36	0.01	2330.	19.28
7	2.08	7.73	11.71	8.80	4.33	0.25	25.09	5.10		5.65	14.10	24.85	0.05	0.01	1711.	19.46
8	3.08	7.74	18.22	14.87	6.92	0.34	40.35	5.72		9.15	26.49	41.36	0.34	0.01	2848.	19.12
9	2.90	7.71	12.01	10.36	7.26	0.21	35.87	3.53		8.11	23.91	35.58	0.12	0.01	2471.	18.80
10	1.14	7.99	7.77	3.56	1.25	0.09	12.67	1.47		7.56	3.70	12.73	4.03	0.01	960.	19.37
11	1.27	8.23	7.09	4.85	1.66	0.12	13.72	1.77		5.65	5.64	13.06	31.44	0.01	963.	19.43
12	1.97	8.45	10.32	7.70	2.76	0.22	21.00	7.06	2.00	1.98	9.58	20.62	2.40	0.01	1325.	
13																
14	1.62	8.11	12.74	5.63	1.60	0.11	20.08	2.30		8.70	8.95	19.95	0.58	0.01	1472.	19.00
15	3.03	8.34	24.62	8.93	4.70	0.23	38.48	6.81	1.16	9.25	20.92	38.14	0.97	0.01	2656.	19.36
16	1.26	8.50	7.79	3.15	1.13	0.15	12.22	3.58	1.00	2.13	5.41	12.12	0.56	0.01	809.	
17	1.37	8.27	9.51	3.55	2.25	0.19	15.50	5.53		2.90	7.18	15.61	2.69	0.01	1042.	19.55
18	4.02	8.37	25.81	13.62	13.07	0.72	53.22	6.63	1.40	7.55	35.81	51.39	0.82	0.01	3511.	19.43
19	2.08	8.06	15.93	5.84	3.64	0.18	25.59	3.61		11.36	10.10	25.07	0.07	0.01	1841.	19.14
20	2.66	7.85	15.25	9.07	3.63	0.13	28.08	4.51		8.79	14.36	27.66	0.03	0.01	1967.	19.57
21	0.91	8.30	5.88	2.23	1.45	0.25	9.81	3.31		1.80	4.50	9.61	1.35	0.01	651.	19.58
22																
23	1.15	8.09	7.79	5.50	1.51	0.10	14.90	2.44		6.20	6.04	14.68	59.20	0.01	1066.	19.28
24	1.54	8.12	9.32	6.99	1.86	0.39	18.56	1.56		6.48	10.41	18.45	8.03	0.01	1343.	19.57
25	2.75	7.94	19.51	8.11	3.51	0.29	31.42	12.84		4.05	13.69	30.58	0.27	0.01	2025.	20.30
26	5.30	8.04	50.06	6.41	5.39	0.41	62.27	11.32		5.93	45.80	63.05	0.18	0.01	4324.	19.62
27																
28	2.35	8.17	19.02	6.63	2.82	0.22	28.69	9.08		3.05	15.41	27.54	2.35	0.01	1861.	20.11
29	2.71	8.68	20.52	10.20	3.72	0.72	35.16	10.89	2.00	2.20	18.74	33.83	0.18	0.06	2230.	19.69
30	3.50	7.80	19.38	17.15	9.13	0.41	46.07	3.14		7.60	34.46	45.20	0.07	0.01	3146.	18.69
31																
32																18.67
33	1.36	8.19	8.55	4.15	2.47	0.28	15.45	1.90		7.48	6.02	15.40	0.13	0.01	1134.	19.05
35	1.15	8.58	5.40	4.44	1.56	0.24	11.64	2.78	2.00	3.55	3.56	11.89	0.20	0.01	788.	19.60
51	3.40	8.40	16.90	12.52	5.69	0.31	35.42	12.09	0.75	5.13	16.66	34.63	1.99	0.01	2285.	19.39
52	3.15	8.34	17.16	13.25	5.80	0.29	36.50	17.88	0.20	3.35	15.61	37.04	1.50	0.01	2336.	19.41
53	3.21	8.28	19.55	15.02	5.61	0.27	40.45	20.66		2.88	15.30	38.84	0.46	0.01	2472.	
54	1.68	8.26	12.24	3.44	2.56	0.25	18.49	11.63		2.80	4.16	18.59	1.04	0.02	1174.	
55	2.90	8.40	21.59	10.16	4.89	0.35	36.99	20.55	0.40	0.98	14.57	36.50		0.01	2273.	
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#197 11/28/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.80	8.10						11.18								0.27
2	2.53	7.95						9.21								18.81
3	3.16	7.78						3.66								19.15
4	2.52	8.24						6.51								19.25
5	0.96	8.43						1.34								19.28
6	2.67	7.84						3.16								19.45
7	2.28	7.77						5.62								19.11
8																18.81
9	3.25	8.16						3.71								19.38
10	1.28	7.97						1.58								19.39
11	1.15	8.40						1.54								
12	2.69	8.40						10.75								
13																19.01
14	1.84	8.15						2.61								19.35
15	3.30	8.27						6.88								
16	1.28	8.29						3.57								19.48
17																
18	4.27	7.81						7.09								19.14
19	2.17	8.13						3.66								19.54
20	2.39	7.91						4.82								19.60
21	1.21	8.08						3.85								
22	1.05	8.41						2.75								19.28
23	1.23	8.18						1.22								19.51
24	1.57	8.19						1.62								
25																
26																
27																
28																
29																
30																
31																
32																19.07
33	1.32	8.16						1.93								19.58
35	1.16	8.09						1.34								19.37
51	3.51	8.03						15.08								19.39
52	4.04	7.99						22.48								
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK=198 12/ 5/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.38	8.73						9.54								
2	2.38	8.73						9.54								0.26
3	2.84	7.84						3.85								18.61
4	2.54	7.84						6.40								19.15
5	0.94	8.58						1.33								19.18
6																
7	2.31	8.18						5.32								19.43
8	3.27	7.97						5.62								19.10
9	3.21	8.09						3.66								18.81
10	1.30	7.83						1.58								19.37
11	1.20	8.32						1.57								19.34
12	2.25	8.41						9.06								
13																
14	1.74	8.11						2.38								19.00
15	3.02	8.11						6.64								19.52
16	1.30	8.52						4.10								
17	1.50	8.43						2.90								19.45
18																
19	2.13	7.76						3.48								19.09
20	2.28	7.67						4.09								19.56
21	1.16	8.22						3.71								19.57
22	1.11	8.25						3.02								
23	1.18	8.27						1.29								19.17
24	1.61	8.01						1.57								19.52
25																
26																
27																
28																
29																
30																
31																
32																
33	1.37	8.43						1.80								19.08
35	1.14	8.23						1.26								19.57
51	3.42	8.37						14.69								19.35
52	3.89	8.35						22.58								19.37
53																
54																
55																
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#199 12/12/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.64	8.04						11.45								
2	2.59	8.09						9.04								0.26
3	3.13	7.71						4.19								18.84
4	2.65	8.10						6.69								19.15
5	0.94	8.22						1.37								19.20
6																
7																19.43
8	3.50	7.92						5.93								19.09
9																
10																
11	1.30	8.41						2.10								19.37
12	1.99	8.45						6.82								
13																
14	1.85	7.86						2.61								19.01
15	3.37	8.21						7.73								19.36
16	1.16	7.96						3.44								
17																19.57
18	3.91	7.71						5.97								19.36
19	2.24	8.10						3.66								19.10
20	2.39	7.97						4.11								19.54
21	1.22	8.05						4.12								19.60
22	1.18	8.23						3.13								
23	1.45	8.27						1.15								19.21
24	1.71	7.95						1.67								19.52
25																
26																
27																
28																
29																
30																
31																
32																
33	1.42	8.42						1.76								19.07
35	1.20	8.04						1.28								19.94
51	3.64	8.44						16.31								19.37
52	4.12	8.18						21.73								19.38
53																
54																
55																
56	3.93							22.94								19.39
57	4.48							27.15								19.48
58	2.58							11.01								20.19
59	2.73							11.75								19.99
60																

Appendix A (Continued).

WEEK#200 12/19/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.90	8.10						13.23								
2	2.63	8.25						8.71								
3	3.13	7.95						3.73								18.83
4	2.65	8.04						6.32								19.15
5	0.96	8.59						1.16								19.16
6	2.75	7.79						3.18								19.26
7																19.45
8	3.52	7.89						6.75								19.10
9	2.94	7.87						5.12								18.72
10																
11	1.24	8.43						1.30								19.36
12	2.34	8.04						7.79								
13	2.58	8.15						12.71								
14	1.75	8.42						2.63								19.01
15	3.50	8.20						8.01								19.36
16	1.36	8.54						3.29								
17																19.50
18																19.80
19	2.17	8.18						2.75								19.08
20	2.35	8.29						4.06								19.51
21	1.23	8.23						3.91								19.60
22	1.14	8.33						2.84								
23	1.48	8.32						0.77								19.17
24	1.79	8.03						1.46								19.30
25																
26																
27																
28																
29																
30																
31																
32																
33	1.38	8.35						2.23								19.08
35	1.05	8.38						1.01								19.57
51	3.66	8.42						15.68								19.35
52	4.09	8.41						22.72								19.43
53																
54																
55																
56	3.91							22.43								19.31
57	4.39							24.76								19.26
58	2.51							11.59								20.20
59	2.55							11.75								20.18
60																

Appendix A (Continued).

WEEK#201 12/26/80

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.54	8.13	20.00	6.35	3.21	0.23	29.79	11.60		3.64	13.17	28.41	0.44		1901.	
2	2.44	8.22	15.49	9.44	3.88	0.27	29.08	10.19		3.85	13.84	27.88	0.12		1864.	0.27
3	2.95	8.18	18.18	13.44	6.99	0.35	38.96	4.48		7.54	27.12	39.14	0.05		2707.	18.65
4	2.42	8.43	12.98	9.33	6.78	0.23	29.32	6.64	1.02	6.06	17.02	30.74	0.02		2030.	19.16
5	0.93	8.29	6.03	4.07	1.60	0.23	11.93	1.89		6.62	2.98	11.49	1.48	0.54	863.	19.27
6	2.10	8.39	9.30	16.88	4.90	0.46	31.54	2.89	1.16	4.40	21.70	30.15	0.10		2078.	19.26
7																
8	3.14	8.37	20.33	14.60	7.35	0.49	42.77	5.83	0.76	4.93	30.76	42.28	0.98		2876.	19.11
9	2.16	8.31	9.05	13.52	5.41	0.37	28.35	4.04		5.66	16.97	26.67	0.08		1863.	18.90
10	1.21	8.37	9.09	3.84	2.00	0.07	15.00	1.92	1.04	6.11	5.54	14.61	2.71		1051.	19.31
11	1.17	8.17	7.36	4.44	1.59	0.11	13.50	1.61		5.09	6.22	12.92	4.92		948.	19.30
12	2.05	8.28	12.02	6.99	3.27	0.17	22.45	8.76		3.34	11.40	23.50	1.72	0.01	1525.	
13	1.77	8.22	11.11	5.88	2.54	0.16	19.69	6.94		2.74	9.62	19.30	0.43		1288.	19.43
14	1.78	8.36	15.95	4.31	0.79	0.08	21.13	2.65	1.10	7.56	10.06	21.37	0.10		1537.	19.01
15	3.33	8.22	24.99	8.88	4.54	0.24	38.65	8.60		4.48	24.98	38.12	0.29		2595.	19.35
16	1.21	8.33	8.16	3.82	1.69	0.15	13.82	3.87	0.28	3.18	5.87	13.20	0.34		912.	
17	1.53	8.28	10.40	3.92	2.55	0.20	17.07	6.67		1.72	8.02	16.41	0.02		1083.	19.57
18	3.12	8.29	21.02	12.04	12.41	0.79	46.26	5.52		7.78	31.18	44.48	1.63		3074.	19.38
19	1.99	8.49	15.40	6.69	3.27	0.18	25.54	3.49	1.18	9.20	10.45	24.32	0.10		1757.	19.07
20	2.24	8.18	14.21	8.93	3.60	0.14	26.88	4.46		8.12	15.87	28.45	0.15		1971.	19.52
21	0.99	8.18	5.44	3.27	1.84	0.20	10.75	2.57		2.22	5.53	10.32	0.02		713.	19.60
22	1.13	8.23	7.01	3.35	1.46	0.27	12.09	3.38		3.30	5.10	11.78	0.30	0.05	823.	
23	1.38	8.49	7.40	5.00	1.47	0.11	13.98	1.18	0.74	5.06	6.81	13.79	20.05		992.	19.16
24	1.72	8.28	11.45	8.05	2.59	0.42	22.51	1.79		6.44	13.84	22.07	7.80		1594.	19.55
25	2.06	7.91	12.84	6.61	3.00	0.21	22.66	8.99		1.86	11.18	22.03	0.02		1441.	20.28
26	3.84	8.31	43.91	5.42	4.30	0.27	53.90	5.94		4.06	41.64	51.64	0.08		3639.	19.62
27																
28	2.31	8.19	17.52	5.91	2.78	0.25	26.46	8.83		2.36	14.05	25.24	1.96		1697.	20.07
29	2.68	8.22	16.50	8.17	3.81	0.51	31.99	10.16		3.80	16.55	30.51	0.05		1996.	19.67
30	2.68	8.11	23.84	10.45	6.34	0.37	41.00	2.51		6.18	31.23	39.92	0.03		2815.	18.66
31																
32																18.55
33	1.28	8.60	8.80	4.34	2.46	0.31	15.91	2.21	1.20	6.10	6.12	15.63	0.03		1112.	19.08
35	1.02	8.53	6.06	3.85	1.86	0.20	11.97	1.18	1.04	6.12	3.32	11.66	0.23		853.	19.58
51	2.53	8.23	9.66	14.75	5.72	0.32	30.45	12.06		2.77	14.16	28.99	0.78		1876.	19.36
52	2.94	8.30	17.92	13.29	4.56	0.40	36.17	16.13		2.58	15.87	34.58	0.06		2241.	19.38
53	3.54	8.11	21.00	14.17	6.06	0.24	41.47	22.19		2.08	17.02	41.29	0.20		2581.	
54	1.63	8.31	11.11	3.03	2.55	0.19	16.88	10.05		2.39	4.04	16.48	0.05		1051.	
55	1.75	8.10	17.85	8.60	4.57	0.47	31.49	16.04		0.96	13.01	30.01	0.01		1909.	
56	3.46							21.07								19.39
57	2.20							13.45								19.57
58	2.36							9.80								20.20
59	1.86							7.56								20.18
60																

Appendix A (Continued).

WEEK#202 1/ 2/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.81	8.14						11.44								0.27
2	2.65	8.15						9.26								18.85
3	3.14	7.79						4.08								19.16
4	2.68	8.14						6.66								19.22
5	0.98	8.42						1.40								19.27
6	2.80	7.85						3.05								
7																19.11
8	3.54	8.08						5.91								18.71
9	3.01	7.98						5.61								19.35
10	1.43	8.14						1.63								19.69
11	1.21	8.53						1.73								
12	2.18	8.06						9.76								19.44
13	2.73	8.25						9.09								19.01
14	1.91	8.01						2.77								19.35
15	3.57	8.10						8.22								
16	1.44	8.62						4.09								19.55
17	1.78	8.39						1.89								19.40
18	3.33	8.04						4.62								19.08
19	2.07	8.30						3.00								19.54
20	2.33	8.02						4.08								19.60
21	1.23	8.44						3.98								
22	1.08	8.65						1.06								19.19
23	1.46	8.42						1.16								19.55
24	1.83	8.43						1.41								
25																
26																
27																
28																
29																
30																
31																
32																
33	1.34	8.25						1.69								19.09
35	0.96	8.65						1.21								19.59
51	3.71	8.50						19.14								19.37
52	3.70	8.54						21.99								19.36
53																
54																
55																
56	3.57							13.94								19.41
57	4.10							33.11								19.57
58	2.48							11.59								20.19
59	2.54							12.71								20.18
60																

Appendix A (Continued).

WEEK#203 1/ 9/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.96	8.14						12.86								
2	2.59	8.34						9.65								0.27
3	2.96	7.75						4.63								18.86
4	2.61	8.03						6.51								19.16
5	0.94	8.53						1.32								19.17
6	2.73	7.57						3.17								19.25
7																
8	3.46	7.74						6.02								19.11
9	2.86	7.61						6.34								18.70
10	1.48	7.97						1.92								19.29
11	1.15	8.53						1.52								19.29
12	2.48	8.15						16.70								
13	2.55	7.97						10.43								19.34
14	1.87	8.20						2.26								19.01
15	3.32	8.20						7.72								19.35
16	1.14	8.19						3.13								
17	1.87	8.33						4.42								19.48
18	3.02	7.97						4.02								19.34
19	1.98	8.14						3.13								19.07
20	2.20	7.96						4.07								19.50
21	1.18	8.40						3.39								19.61
22	0.96	8.25						2.44								
23	1.35	8.38						1.14								19.08
24	1.89	8.04						1.66								19.51
25																
26																
27																
28																
29																
30																
31																
32																
33	1.27	8.39						1.57								
35	1.07	8.17						1.17								19.10
51	3.86	8.53						22.00								19.60
52	4.04	8.51						22.57								19.34
53																19.35
54																
55																
56	3.28							17.38								
57	4.25							26.76								19.30
58	2.49							10.99								19.48
59	2.50							10.85								20.13
60																20.11

Appendix A (Continued).

WEEK#204 1/16/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.93	8.27						12.83								
2	2.70	8.12						10.87								
3	3.20	7.96						4.95								18.84
4	2.65	8.22						6.64								19.15
5	0.95	8.50						1.34								19.14
6	2.82	7.77						3.55								19.24
7																
8	3.59	7.41						6.64								19.06
9	3.05	8.09						7.36								18.69
10	1.56	8.20						2.01								19.29
11	1.20	8.63						1.59								19.30
12	2.21	8.49						8.87								
13	2.58	8.09						10.03								19.36
14	1.82	8.30						2.59								18.99
15	3.36	7.89						7.92								19.34
16	1.30	8.43						3.97								
17	2.05	8.26						4.43								19.54
18	2.92	8.55						5.15								19.38
19	2.14	8.29						3.31								19.04
20	2.28	8.32						4.48								19.51
21	1.20	8.31						3.35								19.60
22	1.01	8.48						2.61								
23	1.34	8.61						1.11								19.05
24	1.91	8.07						1.98								19.51
25																
26																
27																
28																
29																
30																
31																
32																
33	1.28	8.33						1.85								19.08
35	1.17	8.39						1.21								19.55
51	4.12							24.98								19.33
52	4.12	7.99						24.43								19.33
53																
54																
55																
56	3.39							17.57								19.31
57	4.38							27.10								19.49
58	2.56							10.59								20.13
59	2.55							10.59								20.11
60																

Appendix A (Continued).

WEEK#205 1/23/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.51	8.53	15.47	8.46	3.68	0.28	27.89	10.74	0.92	3.96	13.01	28.63	2.62	0.01	1856.	
2	2.55	8.31	14.89	9.75	3.63	0.29	28.56	9.64	0.64	4.72	13.11	28.11	0.10	0.01	1874.	
3	2.98	7.74	11.72	14.67	6.11	0.35	32.85	4.29		9.26	19.12	32.67	0.04	0.01	2287.	18.83
4	2.48	8.33	15.31	10.49	4.34	0.25	30.39	6.24	0.60	9.06	14.52	30.42	0.15	0.01	2114.	19.13
5	0.94	8.27	3.87	4.57	1.34	0.26	10.04	1.25		5.56	3.33	10.14	2.17	0.52	750.	19.15
6	2.58	8.24	11.06	15.92	6.51	0.34	33.83	0.69		7.88	23.63	32.20	0.15	0.01	2306.	19.22
7																
8	3.33	8.00	18.81	14.75	8.05	0.82	42.43	5.68		6.00	27.90	39.58	0.38	0.01	2765.	19.06
9	2.72	7.76	11.56	15.88	7.04	0.34	34.82	6.16		6.76	22.12	35.04	0.01	0.01	2376.	18.69
10	1.45	7.98	8.97	6.58	2.43	0.08	18.06	1.60		10.56	5.75	17.91	1.07	0.01	1348.	19.25
11	1.14	8.22	5.68	6.05	1.35	0.11	13.19	1.53		5.16	5.91	12.60	24.5	0.01	925.	19.21
12	2.18	7.98	13.05	7.46	3.02	0.22	23.75	8.70		4.28	10.26	23.78	3.56	0.01	1557.	
13	2.12	8.03	14.71	7.46	2.72	0.21	25.10	8.30		4.79	10.87	23.96	0.25	0.01	1638.	19.19
14	1.81	7.99	13.84	6.77	1.86	0.19	22.66	2.67		9.73	10.10	22.50	0.05	0.01	1657.	18.99
15	2.87	8.38	21.01	12.95	4.51	0.22	38.69	7.15	0.98	9.24	22.28	39.65	0.16	0.01	2723.	19.31
16	1.51	8.54	8.95	4.87	1.90	0.18	15.90	4.72	0.70	3.96	6.56	15.94	1.92	0.01	1078.	3.46
17	1.82	8.30	11.70	5.63	2.80	0.22	20.35	8.47	0.28	2.74	8.70	20.19		0.06	1318.	19.30
18	2.61	7.96	18.12	10.19	6.57	0.40	35.28	4.14		8.80	23.94	36.08	4.29	0.03	2550.	19.16
19	1.92	7.90	14.98	5.44	2.58	0.19	23.19	2.86		10.41	9.49	22.76	0.03	0.01	1685.	19.03
20	2.05	7.82	13.80	8.84	2.90	0.11	25.45	4.08		9.34	12.18	25.60	2.05	0.01	1829.	19.47
21	1.15	8.30	5.57	3.82	2.16	0.27	11.82	3.18	0.36	2.58	5.58	11.70	0.02	0.01	700.	19.54
22	1.18	8.31	6.97	3.06	1.23	0.18	11.44	3.27	0.28	3.24	4.93	11.72	0.27	0.05	804.	
23	1.29	8.21	6.84	6.26	1.71	0.09	14.90	2.98		7.14	5.26	15.38	86.97	0.01	1101.	19.04
24	1.80	8.00	8.16	10.93	2.70	0.48	22.27	1.52		7.30	13.55	22.37	8.97	0.01	1606.	19.42
25	2.53	8.22	18.17	7.77	3.42	0.27	29.63	11.90		2.47	15.46	29.83	0.02	0.02	1941.	20.24
26	4.48	8.53	52.53	5.60	5.40	0.46	63.99	10.39	1.22	5.06	49.13	65.80	3.09	0.01	4477.	19.25
27																
28	2.21	8.35	15.98	5.96	2.67	0.22	24.83	9.13	0.28	2.54	12.41	24.36	6.41	0.01	1611.	20.11
29	2.33	8.33	17.77	8.30	3.28	0.31	29.66	9.77	0.98	3.13	16.97	30.85	0.01	0.01	2009.	19.48
30	2.99	7.80	5.91	21.93	7.98	0.24	36.06	2.53		7.02	27.67	37.22	0.01	0.01	2529.	18.65
31																
32																18.53
33	1.25	8.00	5.80	5.33	2.33	0.23	13.69	1.26		8.57	4.00	13.83		0.01	1037.	19.15
35	1.17	8.33	5.17	5.48	2.13	0.20	12.98	1.10	1.40	7.11	3.30	12.91	0.01	0.23	936.	19.51
51	3.33	7.29	17.28	12.95	5.36	0.40	35.99	15.00		3.10	16.66	34.76	0.05	0.01	2259.	19.36
52	3.81	8.41	18.48	14.25	5.88	0.43	39.04	20.91	0.52	2.92	16.29	40.64	0.17	0.01	2516.	19.31
53	4.01	8.21	25.47	12.47	4.84	0.39	43.17	23.63		3.32	15.25	42.20	0.06	0.01	2682.	
54	1.96	8.20	14.00	3.00	2.37	0.23	19.60	11.34		3.64	4.31	19.29	0.01	0.01	1251.	
55	3.64	7.72	22.65	9.88	5.01	0.38	37.92	23.92		1.42	14.10	39.44		0.01	2406.	
56	3.11							15.92								19.12
57	4.17							25.98								19.38
58	2.54							10.60								20.08
59	2.51							10.31								20.05
60																

Appendix A (Continued).

WEEK#206 1/30/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.83	8.06						13.03								
2	2.51	7.89						9.39								
3	2.98	7.85						5.35								18.83
4	2.45	7.94						6.95								19.12
5	0.92	8.64						1.37								19.12
6	2.67	8.02						3.51								19.19
7																
8	3.54	7.66						6.60								19.02
9	2.84	8.09						5.64								18.67
10	1.26	8.56						2.08								19.21
11	1.17	8.30						1.76								19.19
12	2.56	8.38						12.05								
13	2.46	8.17						11.89								19.14
14	1.91	8.28						2.78								18.96
15	3.13	7.88						7.82								19.30
16	1.13	8.62						3.30								
17																
18	2.73	8.11						4.38								19.24
19	1.82	8.27						3.34								19.00
20	2.21							6.18								19.42
21	1.16	8.36						3.43								19.52
22	1.18	8.44						3.62								
23	1.23	8.18						1.32								19.01
24	1.85	8.45						1.88								19.38
25																
26																
27																
28																
29																
30																
31																
32																
33	1.17	8.24						1.43								19.04
35	0.95	8.34						1.25								19.49
51	4.02	8.28						26.09								19.26
52	3.99	8.26						23.78								19.27
53																
54																
55																
56	3.21							17.84								19.10
57	4.12							27.12								19.36
58	2.57							12.05								20.04
59	2.47							11.58								20.02
60																

Appendix A (Continued).

WEEK#207 2/ 6/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.51	8.44					13.20									
2	2.50	8.42					10.57									
3	3.02	8.09					5.28									18.77
4	2.36	8.28					0.86									19.11
5	0.93	8.32					1.32									19.11
6	2.58	8.18					3.51									19.18
7																
8	3.38	7.94					6.18									19.02
9	3.38	7.94					0.18									18.66
10	1.50	8.29					1.88									19.19
11	1.19	8.07					1.88									19.06
12	2.86	8.35					12.69									
13	2.65	8.16					9.51									19.08
14	1.85	8.38					2.64									18.93
15	3.18	7.93					7.82									19.27
16	1.31	8.30					3.86									
17	1.96	8.38					4.88									19.37
18	2.72	8.50					3.77									19.19
19	1.81	8.22					3.30									19.00
20	2.13	8.37					4.23									19.40
21	1.13	8.22					3.34									19.50
22	1.20	8.45					3.48									
23	1.16	8.19					1.35									18.97
24	1.84	8.32					1.79									19.04
25																
26																
27																
28																
29																
30																
31																
32																
33	1.08	8.12					1.35									19.03
35	0.90	8.45					1.24									19.54
51	3.55	8.22					24.74									19.26
52	3.51	8.33					21.14									19.25
53																
54																
55																
56	3.31						17.16									19.08
57	4.19						25.06									19.35
58	2.54						10.57									20.03
59	2.46						10.57									20.04
60																

Appendix A (Continued).

WEEK#208 2/13/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.92	8.33						13.73								
2	2.49	8.23						10.03								
3	2.92	8.20						4.86								18.82
4	2.48	8.14						6.34								19.09
5	0.91	8.25						1.24								19.12
6	2.62	7.71						3.23								19.17
7																
8	3.21	7.93						5.86								19.01
9																18.66
10	1.40	8.14						1.82								19.18
11	1.19	8.21						1.78								18.86
12	2.57	8.36						6.18								
13	2.64	8.40						9.75								19.10
14	1.77	8.18						2.38								18.95
15	3.32	8.11						7.52								19.28
16	1.13	8.55						3.05								
17																19.46
18	2.49	8.13						3.53								19.31
19																
20																
21	1.02	8.32						3.05								19.49
22	1.09	8.19						3.01								
23	1.20	8.16						1.26								18.98
24								1.79								19.37
25																
26																
27																
28																
29																
30																
31																
32																
33	1.02	8.22						1.32								19.01
35	1.02	8.12						1.27								19.47
51	3.62	8.29						23.80								19.24
52	3.47	8.37						21.99								19.24
53																
54																
55																
56	2.93							15.65								19.07
57	3.84							25.73								19.34
58	2.17							9.64								20.02
59	2.28							10.71								20.03
60																

Appendix A (Continued).

WEEK#209 2/20/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.18	8.41	19.80	10.01	1.78	0.29	31.89	12.62	0.72	1.70	15.35	30.29	1.25	0.01	1999.	
2	2.49	8.50	16.50	8.01	2.60	0.25	27.36	10.94	1.04	1.58	12.96	26.52	0.07	0.01	1719.	
3	1.82	7.95	12.15	5.28	2.15	0.21	19.79	2.59		3.86	12.70	19.15	0.05	0.01	1357.	18.82
4	1.48	8.58	10.15	5.65	3.07	0.13	19.00	4.23	1.24	2.56	10.31	18.34	0.05	0.01	1228.	19.09
5	0.85	8.88	3.94	3.99	1.49	0.30	9.72	1.50	1.64	3.16	3.75	10.05	0.25	0.51	676.	19.12
6	2.39	7.57	11.24	16.49	7.36	0.35	35.44	2.98		8.36	22.64	33.98	0.33	0.02	2395.	19.16
7																
8	2.65	8.64	17.05	11.60	7.86	0.49	37.00	5.65	1.20	5.72	24.88	37.45	0.18	0.01	2519.	18.97
9																
10	1.13	8.89	7.66	4.78	2.22	0.12	14.78	1.73	0.84	6.80	5.12	14.49	2.55	0.01	1051.	19.19
11	1.02	8.73	6.37	4.29	0.63	0.09	11.38	1.97	1.36	2.12	6.25	11.70	24.20	0.01	784.	19.15
12	2.57	8.09	16.14	8.28	3.26	0.26	27.94	12.45		1.80	13.17	27.42	1.47	0.02	1770.	
13	1.82	8.34	12.21	6.35	2.58	0.14	21.28	8.33	0.08	1.64	11.80	21.85	0.99	0.01	1409.	19.08
14	1.39	8.91	11.83	3.44	1.02	0.09	16.38	2.10	1.44	5.06	8.14	16.74	0.40	0.02	1174.	18.96
15	2.97	8.69	21.98	12.78	5.02	0.17	39.95	7.51	1.28	4.50	27.59	40.88	0.32	0.01	2733.	19.27
16	1.15	8.62	6.92	3.08	1.52	0.13	11.65	4.03	0.48	2.26	4.77	11.54	0.04	0.01	769.	
17	1.73	8.53	12.40	5.92	2.76	0.26	21.34	9.36	0.60	1.56	9.95	21.47	0.06	0.01	1370.	19.22
18	2.31	8.71	17.24	9.08	5.96	0.43	32.71	2.87	0.88	3.70	26.08	33.53	2.88	0.01	2274.	19.42
19																
20																
21	0.98	8.71	5.67	3.51	2.13	0.23	11.54	3.06	0.60	2.40	5.87	11.93	0.22	0.01	790.	19.48
22	1.16	8.68	7.76	3.02	1.31	0.15	12.24	3.44	0.60	2.38	5.32	11.74	0.35	0.03	801.	
23	1.03	8.75	6.33	2.03	0.96	0.09	10.41	1.27	0.88	3.68	4.98	10.81	28.00	0.01	737.	18.97
24	1.51	8.68	7.58	8.43	1.94	0.34	18.29	1.98	0.80	3.00	12.08	17.86	7.68	0.01	1238.	19.36
25	2.68	8.15	17.58	8.20	3.50	0.26	29.54	13.28		1.82	14.21	29.31	0.27	0.02	1885.	20.13
26	5.76	8.49	54.70	6.09	5.49	0.31	66.59	11.37	1.40	2.44	52.05	67.26	0.25	0.01	4552.	19.55
27																
28	2.69	8.36	16.91	7.40	2.52	0.15	26.98	11.08	0.60	0.90	13.95	26.53	7.24	0.02	1709.	19.87
29	2.57	8.31	17.05	6.16	2.80	0.24	26.25	9.99	0.42	1.92	13.85	26.18	0.49	0.01	1708.	19.47
30																
31																
32																18.50
33	0.88	8.66	4.56	4.17	0.80	0.14	9.67	1.67	1.08	4.24	2.71	9.70	0.12	0.01	684.	19.00
35	0.98	8.77	4.06	4.62	1.54	0.15	10.37	1.37	1.28	3.94	3.57	10.16	0.28	0.01	709.	19.49
51	3.49	8.10	20.85	9.79	5.15	0.35	36.14	11.56		2.78	15.77	36.11	0.11	0.01	2301.	19.23
52	3.90	8.15	27.13	8.95	5.41	0.43	41.92	24.89		1.68	16.66	43.23	0.34	0.01	2671.	19.22
53																
54																
55																
56	3.56							18.59								
57	4.13							26.56								19.07
58	2.64							16.33								
59	2.03							9.12								20.01
60																20.02

Appendix A (Continued).

WEEK#210 2/27/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.65							7.21								
2	3.10							2.61								
3																
4																
5																
6																
7																
8																
9																
10																
11	1.49							10.34								19.14
12	3.44							6.76								
13	3.28							2.35								19.08
14																
15																
16	1.28							1.41								
17	2.53							4.65								
18																19.58
19																
20																
21	1.27							5.17								19.48
22	1.32							1.52								
23	1.61							1.62								18.95
24																19.37
25																
26																
27																
28																
29																
30																
31																
32																
33	1.48							1.47								19.01
35	1.39							1.82								19.51
51	4.75							25.51								19.22
52	4.78							3.42								19.25
53																
54																
55																
56	4.31							9.94								19.05
57	5.04							3.46								19.34
58																
59																
60																

Appendix A (Continued).

WEEK#211 3/ 6/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1																
2																
3																
4																
5																
6																
7																
8																
9																19.09
10																
11																
12																
13																
14																19.23
15																
16																
17																19.51
18																
19																
20																
21																
22																
23																
24																
25																
26																
27																
28																
29																19.04
30																19.49
31																19.23
32																19.25
33																
35																
51																
52																19.06
53																19.33
54																20.01
55																20.02
56																
57																
58																
59																
60																

Appendix A (Continued).

WEEK#212 3/13/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.56							13.46								
2	3.24							21.38								
3																
4																
5																
6																
7																
8																
9																
10																
11																
12	3.47							11.69								
13	3.50							12.79								19.10
14																
15																
16	0.93							1.66								
17																
18	5.22							21.38								19.25
19																
20																
21	1.40							3.27								19.50
22	1.10							2.28								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.26							1.72								19.04
35	0.97							1.33								19.48
51	5.17							24.88								19.23
52	4.82							22.50								19.26
53																
54																
55																
56	4.90							23.04								19.06
57	5.32							26.58								19.34
58	3.21							11.54								20.01
59	3.04							4.56								20.02
60																

Appendix A (Continued).

WEEK#213 3/20/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.55							13.63								
2	3.21							21.11								
3																
4																
5																
6																
7																
8																
9																
10																
11								10.34								19.25
12	2.73							16.10								
13	3.46															
14																
15								1.42								
16	0.93															
17								10.99								
18	3.86															
19																19.60
20								3.03								
21	1.28							1.44								
22	0.89															
23																20.19
24																19.55
25																
26																20.22
27																19.93
28																19.00
29																
30																18.72
31																19.31
32								2.17								20.08
33	1.44															20.05
35								23.99								20.05
51	5.00							24.93								
52	5.26															
53																
54																19.15
55								24.56								19.29
56	4.99							27.27								20.46
57	5.26							10.83								20.39
58	3.06							4.86								
59	3.17															
60																

Appendix A (Continued).

WEEK#214 3/27/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.85	8.13	16.33	8.09	3.76	0.23	28.41	11.69		4.50	12.39	28.58	0.29	0.03	1876.	
2	2.76	8.07	15.25	10.10	3.88	0.13	29.36	10.69		5.30	12.70	28.69		0.01	1918.	
3																
4																
5																
6																
7																
8																
9																
10																
11										3.68	9.73	22.86	2.00	0.02	1487.	
12	2.24	8.21	12.44	6.51	2.92	0.21	22.08	9.45		4.00	11.28	25.49	1.55	0.04	1685.	19.24
13	2.55	8.13	15.52	6.92	2.76	0.21	25.41	10.21								
14										3.04	3.00	8.35	2.84	0.41	584.	
15																
16	0.86	8.21	4.25	2.86	1.00	0.14	8.25	2.31								
17										1.92	11.76	25.55		0.03	1648.	19.16
18	2.66	7.89	17.70	4.69	2.93	0.23	25.55	11.87								
19																
20										2.28	4.88	9.76	1.05	0.02	666.	19.70
21	1.02	8.20	4.87	2.93	1.67	0.23	9.70	2.60		2.98	2.83	7.83	2.74	0.36	523.	
22	0.84	8.08	3.53	2.65	0.92	0.10	7.20	1.57								
23																
24										3.00	17.49	36.91	0.05	0.02	2371.	
25	3.63	7.74	22.13	9.53	4.44	0.30	36.40	16.42		6.24	54.65	66.44	0.36	0.01	4021.	
26	5.89	8.31	52.28	6.69	5.68	0.35	65.00	5.55								
27										2.80	13.32	27.09	5.88	0.01	1774.	
28	2.93	8.04	17.16	6.56	3.38	0.20	27.30	10.97		3.92	12.49	26.06	0.72	0.03	1751.	
29	2.60	8.14	15.07	8.09	3.60	0.45	27.21	9.65		8.58	44.24	66.11	2.29	0.01	4396.	
30	5.56	8.27	31.63	19.85	10.90	0.49	62.87	13.29								
31																
32										5.64	4.96	13.52	3.73	0.22	960.	19.23
33	1.37	8.38	6.21	4.96	2.23	0.16	13.56	2.60	0.32	6.70	3.31	11.79	0.21	0.04	872.	19.75
34	1.20	8.40	4.64	5.26	2.05	0.18	12.13	1.30	0.48	3.14	15.35	43.05	0.22	0.05	2714.	19.62
35	4.13	8.21	15.82	23.76	5.01	0.35	44.94	24.56		2.82	16.29	44.04	1.34	1.06	2769.	19.62
51	4.29	8.18	27.34	11.28	5.01	0.39	44.02	24.93								
52																
53																
54																18.87
55																19.25
56								11.72								20.24
57	2.49							24.25								20.22
58	4.29							26.56								
59	4.65															
60																

Appendix A (Continued).

WEEK#215 4/ 3/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.29							11.69								
2	3.21							21.11								
3																
4																
5																
6																
7																
8																
9																
10																
11																
12	3.06							10.21								
13	2.51							13.56								19.14
14																
15																
16	1.10							1.76								
17																
18	2.80							3.84								19.22
19																
20																
21	1.22							3.86								19.67
22	0.96							1.53								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33																19.18
35	1.11							1.38								19.21
51	5.36							25.85								19.41
52	5.01							23.69								19.42
53																
54																
55																
56	5.08							25.25								19.10
57	5.23							25.91								19.40
58	3.01							11.99								20.13
59	2.94							11.42								20.12
60																

Appendix A (Continued).

WEEK#216 4/10/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.27							13.38								
2	1.31							12.17								
3																
4																
5																
6																
7																
8																
9																
10								11.08								19.07
11								11.69								
12	2.93															
13	3.10															
14								2.25								
15																18.91
16	1.77							3.59								
17																
18	2.84															19.47
19								2.68								
20								1.58								
21	1.10															
22	1.02															
23																
24																
25																
26																
27																
28																
29																
30																
31																19.12
32								2.61								19.43
33	1.38							1.99								19.30
35	1.45							25.27								19.33
51	4.40							24.02								
52	5.18															
53																19.02
54																19.32
55								25.70								20.06
56	4.94							31.06								20.07
57	5.54							11.53								
58	2.93							12.51								
59	2.96															
60																

Appendix A (Continued).

WEEK#217 4/17/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.68							12.00								
2	2.61							10.81								
3																
4																
5																
6																
7																
8																
9																
10																
11																
12	2.84							14.22								
13	2.50							11.54								
14																19.05
15																
16	0.85							1.97								
17																
18	3.46							4.40								
19																18.88
20																
21	0.94							2.53								
22	0.88							1.57								19.41
23																
24																
25																
26																20.23
27																19.54
28																
29																19.85
30																19.51
31																18.75
32																
33	1.18							2.31								18.72
35	1.04							1.39								19.05
51	3.89							24.62								19.33
52	4.02							24.64								19.22
53																19.21
54																
55																
56	3.92							25.27								
57	4.40							29.58								19.31
58	2.32							10.67								19.29
59	2.30							10.81								20.01
60																19.98

Appendix A (Continued).

WEEK#218 4/24/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.64	8.48	15.14	8.93	3.78	0.26	28.11	11.97	0.52	2.44	12.54	27.47	3.24	0.02	1774.	
2	2.57	8.25	14.26	9.64	3.51	0.25	27.66	11.12		3.28	12.23	26.63	0.40	0.01	1755.	
3																
4																
5																
6																
7																
8																
9																
10																
11																
12	2.46	8.53	13.06	7.86	3.29	0.22	24.43	9.99	0.44	2.28	11.24	23.95	2.49	0.01	1553.	
13	2.83	8.53	18.00	7.37	3.05	0.26	28.68	11.37	0.24	2.06	14.96	28.63	7.96	0.02	1863.	19.02
14																
15																
16	0.82	8.62	3.75	3.13	1.12	0.12	8.12	1.73	0.48	2.92	3.00	8.13		0.02	565.	
17																
18	4.25	8.38	23.33	19.18	11.48	0.55	54.54	4.82	0.24	1.84	45.49	52.39	0.69	0.02	3557.	18.87
19																
20																
21	1.56	8.49	7.93	4.87	2.35	0.24	15.39	6.27	0.20	2.56	6.44	15.49	0.89	0.04	1012.	19.41
22	0.84	8.64	3.96	3.52	0.96	0.17	8.61	1.84	0.48	3.26	2.65	8.23	1.29	0.08	586.	
23																
24																
25	2.93	8.43	17.43	8.60	3.47	0.25	29.75	13.11	0.20	2.10	14.73	30.14	0.09	0.05	1931.	
26	5.25	8.25	43.95	6.77	5.00	0.38	56.10	9.99		5.46	41.23	56.68	0.32	0.05	3889.	
27																
28	2.79	8.55	15.95	7.73	3.30	0.24	27.22	10.79	0.24	2.46	14.16	27.65	6.44	0.05	1791.	
29	2.59	8.51	14.35	8.55	3.24	0.33	26.47	9.86	0.20	2.32	13.01	25.39	0.07	0.05	1675.	
30	4.36	8.17	24.05	18.78	8.74	0.39	51.96	9.99		3.56	36.43	49.98	0.02	0.05	3372.	
31																
32																
33	1.19	8.63	5.26	5.66	2.20	0.20	13.32	2.05	0.52	2.74	8.06	13.37	1.73	0.05	911.	18.99
35	1.01	8.68	4.24	4.74	1.99	0.18	11.15	1.36	0.48	6.06	3.38	11.28	0.15	0.37	816.	19.35
51	4.05	8.01	21.99	13.30	5.11	0.49	40.89	23.17		2.82	16.24	42.23	0.04	0.02	2627.	19.18
52	4.10	8.19	24.68	12.42	4.92	0.36	42.38	23.64		2.88	16.76	43.28	0.25	0.85	2709.	19.19
53																
54																
55																
56	4.18							24.40								18.98
57								25.22								19.26
58	2.51							10.38								19.98
59	2.47							10.66								19.98
60																

Appendix A (Continued).

WEEK#219 5/ 1/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.01							13.23								
2	2.71							10.47								
3																
4																
5																
6																
7																
8																
9																
10																
11								10.74								
12	2.65							11.32								
13	2.82															
14																
15								1.94								
16	0.91															
17								5.83								
18	4.20															
19																
20								3.01								
21	1.05							1.68								
22	0.88															
23																
24																
25																
26																
27																
28																
29																
30																
31																
32								1.55								
33	1.11							1.33								
35	1.14							23.45								
51	4.16							22.93								
52	4.10															
53																
54																
55								23.15								
56	3.98							27.88								
57	4.61							11.03								
58	2.62															
59																
60																

Appendix A (Continued).

WEEK#220 5/ 8/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																19.03
11																
12																
13																
14																
15																18.92
16																
17																
18																19.47
19																
20																
21																
22																
23																
24																
25																
26																
27																
28																
29																
30																
31																18.98
32																19.35
33																19.17
35																19.19
51																
52																
53																
54																18.98
55																19.25
56																19.95
57																19.96
58																19.94
59																
60																

Appendix A (Continued).

WEEK#221 5/15/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.24	8.56	14.54	8.95	3.42	0.26	27.17	9.99	0.52	4.08	11.56	26.15	3.73	0.03	1739.	
2	1.74	8.32	10.54	7.82	2.55	0.25	21.16	7.45	0.40	5.66	8.80	22.31	6.15	0.17	1484.	
3	2.63	7.90	11.86	10.72	5.71	0.34	28.63	3.28		8.06	17.63	28.97	0.15	0.02	2025.	18.85
4	1.98	8.17	13.53	8.79	3.74	0.27	26.33	4.31		8.14	13.19	25.64	5.33	0.02	1826.	19.23
5																
6																
7																
8																
9																
10																
11	2.17	8.55	14.20	8.67	3.25	0.24	26.36	10.59	2.80	2.12	10.98	26.49	7.82	0.03	1665.	
12	2.33	8.05	17.39	7.50	3.07	0.25	28.21	12.50		3.62	13.01	29.13	2.22	0.01	1880.	19.16
13																
14																
15										1.92	7.75	15.96	9.26	0.02	1021.	
16	1.60	8.25	6.65	6.04	2.27	0.18	15.14	6.29								
17	2.49	7.88	11.69	12.57	5.90	0.41	30.57	3.50		3.54	24.20	31.24	0.89	0.01	2111.	18.95
18																
19																
20										2.74	2.89	8.12	0.21	0.01	566.	19.54
21	0.80	8.26	5.11	1.77	0.88	0.20	7.96	2.49		3.98	3.99	10.02	1.28	0.22	712.	
22	0.86	8.27	4.53	3.99	1.20	0.16	9.88	2.05								
23																
24										2.46	14.94	30.48	0.04	0.01	1998.	20.39
25	2.69	8.17	18.90	8.83	3.73	0.25	31.71	13.08		5.64	51.63	60.78	0.15	0.02	4236.	19.50
26	4.98	7.98	46.14	7.33	5.37	0.38	59.22	3.51								
27										3.26	14.47	30.05	1.78	0.01	1958.	20.12
28	2.49	8.26	18.42	7.82	3.20	0.21	29.65	12.32		3.98	13.12	27.20	0.15	0.02	1816.	19.87
29	2.30	8.23	15.59	8.71	3.30	0.31	27.91	10.10		7.52	50.13	62.38	0.09	0.01	4239.	18.83
30	4.23	8.10	28.95	20.30	9.69	0.38	59.32	4.73								
31																
32										4.24	4.00	9.93	8.02	0.05	724.	19.15
33	0.88	8.27	5.07	3.71	1.32	0.17	10.27	1.69		7.48	6.45	16.90	0.20	0.02	1224.	19.63
35	1.30	8.49	7.19	7.46	2.71	0.19	17.55	2.49	0.48	3.26	15.98	39.26	0.04	0.03	2494.	20.06
51	3.60	8.21	21.00	13.05	4.85	0.37	39.27	20.02		2.76	16.76	45.78	0.01	0.39	2863.	20.00
52	3.91	8.10	27.12	12.97	4.98	0.37	45.44	20.26		2.06	15.25	40.15	0.16	0.04	2514.	
53	3.75	8.04	21.94	13.38	4.87	0.36	40.55	22.84		3.44	4.51	20.21	0.01	0.03	1279.	
54	1.84	8.23	13.61	3.35	2.42	0.22	19.60	12.26		1.08	17.82	34.62	0.20	0.08	2227.	
55	3.28	6.27	20.07	10.49	5.07	0.37	36.00	15.72		2.34	18.43	33.03	0.15	0.01	2265.	19.12
56	3.32	8.11	14.12	13.63	6.98	0.35	35.08	15.26		1.50	18.37	46.46	0.03	0.01	2927.	19.52
57	4.12	7.58	25.22	14.41	7.44	0.41	47.48	27.59		1.74	12.23	24.88	0.49	0.01	1614.	20.12
58	2.21	7.90	16.93	4.96	2.84	0.26	24.99	10.91					0.01	0.01		20.11
59			17.11	4.43	2.54	0.26	24.34						3.14			
60	1.50	8.27	10.39	4.49	1.80	0.22	16.90	5.89		3.34	8.02	17.25		0.01	1157.	

Appendix A (Continued).

WEEK#222 5/22/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.11							12.32								
2	2.75							10.13								
3																18.73
4																19.08
5																19.10
6																19.22
7																
8																
9																
10																19.31
11																
12	2.71							9.86								
13	2.90							11.10								19.05
14																
15																
16	1.51							4.57								
17																
18	3.47							3.53								18.87
19																
20																
21	1.12							2.13								19.41
22	0.88							1.35								
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.46							1.79								19.22
35	1.05							1.24								19.41
51								22.47								19.28
52	4.58							24.64								19.28
53																
54																
55																
56	4.47							23.98								19.01
57	4.85							27.71								19.29
58	2.65							10.94								19.95
59	3.16							11.97								19.93
60	9.98							60.71								

Appendix A (Continued).

WEEK#223 5/29/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1																
2																
3																18.67
4																18.98
5																19.00
6																19.14
7																
8																
9																
10																18.63
11																
12																
13																19.04
14																
15																
16																
17																
18																18.85
19																
20																
21																19.37
22																
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33																18.92
35																19.36
51																19.22
52																19.23
53																
54																
55																
56																19.00
57																19.28
58																19.98
59																19.99
60																20.04

Appendix A (Continued).

WEEK#224 6/ 5/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.88							11.81								
2	2.63							9.98								
3	3.49							3.23								
4	2.02							3.38								
5	1.21							1.80								19.22
6	2.13							2.27								19.69
7																
8																
9																
10	1.44							2.32								19.79
11																19.49
12	2.38							9.86								
13	2.75							10.93								19.19
14																19.15
15																19.44
16	1.56							5.37								
17																
18	3.07							3.75								18.97
19																
20																
21	3.07							3.75								19.54
22	0.92							1.37								
23																19.41
24																19.41
25																
26																
27																
28																
29																
30																
31																
32																
33	1.03							1.72								
35	1.24							1.80								19.65
51	3.98							22.52								19.72
52	4.49							25.85								19.70
53																
54																
55																
56	4.14							24.65								19.13
57	4.72							29.04								19.48
58	2.54							11.21								20.06
59	2.46							10.93								20.07
60																19.91

Appendix A (Continued).

WEEK#225 6/12/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.95							12.40								
2	2.62							10.33								
3	3.77							3.72								18.71
4	2.41							4.52								19.04
5	1.25							1.96								19.10
6	2.36							2.29								19.22
7																
8																19.02
9																
10	1.63							2.46								19.52
11																19.28
12	2.46							9.88								
13	2.77							11.62								18.76
14																18.84
15																19.22
16	1.72							5.22								
17																
18	3.14							4.11								18.89
19																19.18
20																
21	0.98							2.23								
22	0.96							2.67								19.36
23																
24																19.14
25																19.24
26																20.23
27																19.37
28																
29																19.89
30																19.51
31																18.56
32																
33	1.05							1.77								18.26
35	1.23							1.61								18.94
51	4.00							21.69								19.40
52	4.37							25.45								19.30
53																19.30
54																
55																
56	4.32							25.36								
57	4.61							28.99								19.02
58	2.58							11.47								19.33
59	2.48							11.03								19.94
60	1.69							6.55								19.93
																19.75

Appendix A (Continued).

WEEK#226 6/19/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.96							11.47								18.58
2	2.74							10.33								18.88
3																18.92
4																19.09
5	1.21							1.81								
6	2.51							2.21								
7																
8																
9																
10	1.58							2.33								19.25
11	1.86							2.68								19.20
12	2.54							9.38								
13	2.94							11.92								19.04
14	1.25							1.87								18.80
15	1.46							2.09								19.07
16	1.75							5.29								
17																
18	3.54							4.52								18.62
19																
20																
21	0.99							2.98								19.14
22	0.94							1.83								
23	1.60							2.51								19.10
24	1.30							2.13								19.13
25																
26																
27																
28																
29																
30																
31																
32																
33																
35	1.21							1.38								18.78
51	4.32							24.45								19.23
52	4.96							25.45								19.19
53																19.19
54																
55																
56	4.10							21.69								19.01
57	4.95							29.37								19.25
58	2.73							11.32								19.87
59	2.64							11.17								19.86
60	3.00							13.45								19.44

Appendix A (Continued).

WEEK#227 6/26/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	IDS	WATER ELEVATION
1	2.80	8.18	14.96	9.40	4.72	0.28	29.36	12.27		5.80	12.70	30.77	4.72	0.01	1999.	
2	2.44	8.19	13.10	9.98	3.35	0.26	26.69	9.72		5.95	11.71	27.38	6.82	0.01	1822.	
3	2.66	8.24	14.20	8.76	5.26	0.31	28.53	2.90		8.04	17.88	28.82	0.09	0.02	2030.	18.90
4	1.56	8.10	8.28	5.31	2.35	0.26	16.20	2.13		6.50	7.96	16.59	21.35	0.02	1190.	19.09
5	1.15	8.28	4.94	5.14	1.21	0.29	11.58	1.71		5.34	4.68	11.73	44.87	0.02	854.	19.30
6	2.28	8.28	11.30	6.25	5.27	0.32	25.14	2.65		7.08	16.24	25.97	0.28	0.01	1808.	19.37
7																
8	3.41	8.26	19.51	14.96	6.14	0.37	40.98	6.02		7.60	28.11	41.73	0.10	0.01	2865.	19.26
9																
10	1.52	8.10	8.74	4.40	2.57	0.28	15.99	2.11		8.10	6.39	16.60	0.03	0.01	1207.	19.45
11	1.67	8.18	8.18	6.97	1.71	0.14	17.00	2.53		6.50	7.22	16.25	122.4	0.01	1187.	19.28
12	2.25	8.12	13.58	7.36	3.17	0.27	24.38	10.23		3.93	10.77	24.93	8.81	0.01	1626.	
13	2.64	8.16	15.77	7.01	3.24	0.29	26.31	9.66		3.94	12.60	26.20	1.07	0.01	1742.	19.21
14	1.25	8.34	7.01	4.40	1.10	0.10	12.61	1.83	0.20	5.56	5.27	12.86	3.10	0.01	930.	19.01
15	1.41	8.37	9.66	3.33	1.15	0.12	14.26	1.76	0.28	6.74	5.67	14.45	42.22	0.02	1062.	19.31
16	1.79	8.32	9.75	5.14	2.21	0.20	17.30	5.82	0.12	4.58	6.98	17.50	6.52	0.01	1186.	
17																
18	3.55	7.75	15.32	16.37	8.03	0.48	40.20	4.41		8.60	25.64	38.65	0.67	0.01	2709.	19.00
19	2.09	8.58	13.37	5.67	2.73	0.18	22.05	3.52	1.20	8.16	10.10	22.98	0.11	0.01	1605.	19.51
20																
21	0.94	8.24	5.57	2.54	1.21	0.21	9.53	2.25		3.20	3.75	9.20	0.15	0.01	657.	19.27
22	1.32	8.39	7.42	4.09	1.56	0.23	13.30	2.59	0.28	3.84	6.75	13.46	0.38	0.10	939.	
23	1.57	8.20	8.01	5.00	1.68	0.14	14.83	3.07		4.10	6.91	14.08	129.9	0.01	1001.	20.53
24	1.10	8.29	5.02	4.83	1.06	0.14	11.65	1.76		4.80	4.94	11.50	14.75	0.03	837.	19.40
25	2.98	8.00	19.69	7.54	3.54	0.29	31.06	13.15		2.50	14.16	29.81	0.11	0.01	1957.	
26	5.49	8.00	54.09	6.21	5.26	0.38	65.94	3.21		6.56	54.14	63.91	0.13	0.01	4561.	
27																
28	2.84	8.11	19.76	7.62	3.92	0.26	31.56	13.96		3.24	13.95	31.15	1.68	0.01	2027.	
29	2.50	8.27	16.53	6.80	2.93	0.31	26.57	9.28		4.66	12.23	26.17	0.35	0.01	1765.	
30	3.09	7.65	17.19	12.95	6.06	0.41	36.61	4.61		7.00	25.94	37.55	0.13	0.01	2581.	
31																
32																
33	0.95	8.17	5.05	3.10	1.21	0.23	9.59	1.51		4.20	4.00	9.71	3.04	0.01	704.	19.00
35	1.23	8.39	5.46	5.52	2.11	0.22	13.31	1.56	0.72	7.38	3.98	13.64	0.07	0.01	989.	19.53
51	3.83	8.34	24.43	11.82	5.06	0.40	41.71	21.14	0.48	3.62	16.76	42.00	0.65	0.01	2665.	19.45
52	4.09	8.25	29.83	11.29	4.82	0.37	46.31	25.50		3.48	15.82	44.80	0.07	0.07	2861.	19.46
53	4.02	8.15	25.37	11.63	4.73	0.36	42.09	27.02		2.22	14.68	43.92	0.02	0.02	2686.	
54	1.97	8.38	14.03	3.10	2.38	0.24	19.75	12.25	0.38	2.92	4.94	20.49	0.10	0.02	1284.	
55	3.69	7.50	27.59	9.53	4.77	0.36	42.25	26.50		1.02	13.32	40.84	0.09	0.05	2539.	
56	3.60	8.31	21.92	10.19	5.85	0.35	38.31	17.68	0.08	2.68	18.56	39.00	0.12	0.01	2477.	19.15
57	4.44	8.10	25.06	12.64	7.39	0.41	45.50	26.12		0.82	17.91	44.85	0.03	0.01	2771.	19.24
58	2.24	8.26	19.51	5.07	2.90	0.28	27.76	10.06		2.50	12.13	27.89	0.07	0.01	1688.	20.15
59	2.25	7.53	19.58	5.14	2.71	0.27	27.70	10.06		2.97	11.66	27.89	0.02	0.01	1694.	20.14
60	2.44	8.28	17.33	3.49	2.47	0.30	23.59	8.20		3.64	12.44	24.28	6.43	0.01	1620.	19.68

Appendix A (Continued).

WEEK#228 7/ 3/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.10							13.45								
2	2.81							11.07								
3	3.03							2.41								
4	1.58							2.11								
5	1.23							1.69								19.08
6	2.37							2.41								19.25
7																
8																19.05
9																
10	1.64							2.14								19.44
11	1.97							3.07								
12	2.95							12.44								
13	2.79							10.65								19.30
14	1.25							1.98								18.84
15	1.55							1.83								19.17
16	2.41							7.08								
17																
18	3.72							3.66								19.13
19																19.25
20																
21	1.01							2.19								19.30
22	1.31							2.19								
23	1.63							2.40								
24	1.19							1.78								
25																
26																
27																
28																
29																
30																
31																
32																
33	1.04							1.61								
35	1.19							1.30								19.47
51	3.85							20.11								19.39
52	4.22							34.81								19.40
53																
54																
55																
56	3.80							20.64								19.25
57	4.61							30.93								19.36
58	2.66							11.36								20.04
59	2.20							9.42								20.03
60	2.87							12.28								19.78

Appendix A (Continued).

WEEK#229 7/10/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.97							13.04								
2	2.50							10.03								
3	2.05							2.98								18.71
4	1.48							2.41								18.91
5	1.22							2.19								
6	2.21							2.32								
7																
8	3.41							5.78								
9																
10	1.35							2.14								
11	1.67							2.61								19.40
12	2.49							10.71								19.40
13	2.07							6.77								
14	1.28							2.44								19.11
15	1.47							2.28								
16	2.27							8.26								
17																
18	3.56							3.97								
19	2.07							3.43								
20																
21	0.98							2.20								
22	0.98							1.44								19.30
23	1.47							2.20								
24	1.19							2.20								19.31
25																
26																
27																
28																
29																
30																
31																
32																
33	1.15							1.98								
35	1.12							1.46								18.79
51	3.81							19.84								19.32
52	4.13							23.17								19.32
53																
54																
55																
56	3.80							21.47								19.07
57	4.63							30.53								
58	2.44							10.43								19.99
59	2.45							10.71								20.00
60	2.84							12.70								19.77

Appendix A (Continued).

WEEK#230 7/17/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.85							10.04								
2	2.63							8.48								
3																
4																
5	1.38							2.65								
6	2.31							2.48								
7																
8	3.55							5.58								
9																
10	1.52							3.13								19.36
11																
12	2.58							10.88								
13	2.00							5.22								19.27
14	1.43							2.51								
15	1.49							1.84								
16																
17																
18	3.75							3.48								
19	2.23							3.01								
20																
21																19.29
22	0.97							0.95								
23																
24																
25																20.15
26																19.36
27																
28																19.97
29																19.87
30																18.66
31																
32																
33																18.84
35	1.25							1.39								19.54
51	3.77							16.32								19.34
52	4.28							23.52								19.38
53																
54																
55																
56	3.93							20.39								19.30
57	4.74							28.26								18.90
58	2.69							10.87								20.04
59	2.60							10.87								20.06
60	2.87							11.92								19.77

Appendix A (Continued).

WEEK#231 7/24/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.71							11.74								
2	2.46							9.27								
3	3.63							9.70								
4	1.59							2.69								
5																
6																
7																
8																
9																
10	1.50							2.19								19.74
11	1.40							2.51								
12	2.43							10.03								
13	2.45							9.90								19.40
14																
15																
16																
17																
18																
19																19.32
20																
21	1.01							2.61								
22	0.91							1.50								19.27
23																
24	1.17							1.75								
25																
26																
27																
28																
29																
30																
31																
32																
33	1.19							2.22								
35																18.84
51	3.40							15.88								19.61
52	4.06							24.11								19.66
53																19.65
54																
55																
56	3.66							21.75								
57	4.45							29.35								19.29
58	2.58							11.74								19.67
59	2.39							11.00								20.26
60	2.70							12.84								20.25
																19.82

Appendix A (Continued).

WEEK#232 7/31/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.76	8.27	14.68	9.73	3.76	0.27	28.44	12.62		4.64	12.13	29.39	1.94	0.02	1902.	
2	2.24	8.44	12.72	8.57	2.81	0.23	24.33	8.72	0.48	4.82	10.41	24.43	0.82	0.01	1625.	
3																
4																
5																
6																
7																
8																
9																
10	1.52	8.48	8.18	4.97	2.67	0.31	16.13	2.38	1.56	7.08	5.20	16.22	0.10	0.01	1145.	19.35
11																
12	2.38	8.29	11.92	9.60	3.45	0.24	25.21	10.75		4.40	10.41	25.56	2.65	0.02	1667.	
13	2.48	8.21	15.32	7.53	3.13	0.25	26.23	11.95		4.18	11.24	27.37	2.55	0.01	1769.	19.12
14																
15																
16																
17																
18																
19																19.31
20																
21	2.01	8.27	13.32	3.59	2.07	0.23	19.21	4.92		3.16	11.78	19.86	0.15	0.02	1345.	19.20
22	1.14	8.24	6.02	5.06	1.37	0.19	12.64	2.12		3.84	6.19	12.15	0.92	0.01	871.	
23																
24																
25	2.83	7.73	19.47	7.88	3.50	0.23	31.08	14.55		2.62	13.74	30.91	0.05	0.01	1993.	
26	5.25	8.38	49.43	6.23	4.87	0.34	60.87	3.23	0.46	5.38	53.01	62.08	0.41	0.01	4336.	
27																
28	2.93	8.15	19.20	7.23	3.90	0.23	30.56	14.55		3.18	14.31	32.04	1.39	0.01	2040.	
29	2.63	8.01	17.82	7.26	3.23	0.32	28.63	10.20		4.54	14.16	28.90	0.40	0.02	1926.	
30	3.65	8.19	18.89	13.95	6.53	0.47	39.84	4.19		7.36	29.10	40.65	0.10	0.02	2807.	
31																
32																
33	1.25	7.96	6.26	4.08	1.80	0.29	12.43	2.12		4.08	6.66	12.86	3.30	0.01	903.	18.78
35	1.61	8.34	7.35	7.56	2.27	0.23	17.41	5.50	0.30	5.80	6.08	17.68	0.10	0.01	1207.	19.76
51	3.26	8.45	18.29	13.61	4.06	0.32	36.28	17.25	0.72	4.90	15.04	37.91	0.10	0.01	2410.	19.31
52	3.87	8.18	21.15	14.83	4.93	0.34	41.25	24.53		3.16	15.30	42.99	0.15	0.02	2654.	19.30
53	4.08	8.13	23.05	16.49	5.68	0.35	44.57	26.66		2.38	15.04	44.08	0.10	0.01	2756.	
54																
55	3.61	7.63	19.88	16.99	4.40	0.34	41.61	26.19		0.80	13.17	40.16	0.20	0.01	2474.	
56	3.68	8.16	18.09	17.45	7.00	0.33	42.87	25.58		2.68	14.89	43.15	0.66	0.01	2649.	
57	4.46	7.55	21.56	20.27	8.89	0.38	49.20	30.17		0.64	17.33	48.14	0.10	0.02	2966.	19.08
58	2.66	8.17	19.56	5.61	2.86	0.25	28.28	13.80		2.46	12.44	28.70	0.10	0.01	1843.	19.33
59	2.43	7.51	17.96	5.25	2.46	0.25	25.92	12.76		1.82	11.71	25.29	0.10	0.01	1684.	19.95
60	2.72	8.03	17.28	8.80	2.44	0.26	28.78	14.99		1.76	11.87	28.62	0.15	0.02	1822.	19.91
																19.71

Appendix A (Continued).

WEEK#233 8/ 7/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.62							12.10								
2	2.44							10.90								
3																
4																
5																
6																
7																
8																
9																
10	1.50							2.90								19.20
11																
12	2.30							10.48								
13	1.63							4.14								
14																
15																
16																
17																
18	1.79							3.15								
19																
20																
21	1.10							2.99								
22	1.10							2.33								19.17
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.47							2.39								18.73
35	1.57							4.06								19.35
51	3.42							18.67								19.20
52	3.99							26.54								19.20
53																
54																
55																
56	3.36							21.01								
57	4.39							34.50								
58	2.62							13.44								
59																20.03
60	2.64															20.02
																19.65

Appendix A (Continued).

WEEK#234 8/14/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.25							12.95								
2	2.54							10.90								
3																18.51
4																18.80
5																
6																
7																
8																
9																
10	1.59							3.20								19.12
11																
12	2.25							8.95								
13	2.30							8.95								
14																19.07
15																
16																19.05
17																
18	1.61							3.83								19.29
19																19.56
20																
21	0.91							2.33								
22	1.16							1.84								19.13
23																
24																
25																20.06
26																19.27
27																
28																19.76
29																
30																18.45
31																
32																
33	1.52							3.71								18.65
35	1.45							3.52								19.30
51	3.28							17.03								19.12
52	3.76							23.58								19.12
53																
54																
55																
56	3.07							17.25								19.04
57	4.45							31.89								19.25
58	2.18							9.31								19.89
59	2.43							12.10								19.87
60	2.45							12.91								19.63

Appendix A (Continued).

WEEK#235 8/21/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.71							10.48								
2	2.30							8.06								
3																18.53
4																18.80
5																18.91
6																18.99
7																
8																18.81
9																
10	1.37							2.78								19.05
11																
12	2.42							8.38								
13	2.08							6.44								19.06
14																
15																19.04
16																
17																
18																
19																19.13
20																
21	1.26							3.78								
22	1.42							3.27								18.93
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.36							2.99								18.69
35	1.33							2.67								19.29
51	3.50							15.74								19.06
52	3.98							21.23								19.10
53																
54																
55																
56	3.34							17.25								19.03
57	4.06							29.37								19.24
58	2.63							10.48								19.95
59	2.51							10.48								19.93
60	3.17							13.49								19.61

Appendix A (Continued).

WELK#236 8/28/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.67	8.65	15.09	8.14	3.50	0.26	26.99	9.68	0.32	5.15	11.45	26.60	3.23	0.03	1780.	
2	2.17	8.71	12.74	8.32	2.82	0.24	24.12	6.62	1.28	5.22	11.14	24.26	2.40	0.01	1630.	
3	4.29	8.27	30.78	12.56	6.93	0.44	50.71	4.79		8.21	36.75	49.75	0.35	0.01	3497.	18.49
4	1.53	8.64	9.61	4.30	2.60	0.28	16.79	1.67	1.68	7.47	6.52	17.34	35.82	0.01	1228.	19.77
5																
6																
7																18.98
8																
9																18.77
10	1.48	8.69	8.07	4.63	2.50	0.36	15.56	2.26	1.28	7.09	5.39	16.02	10.04	0.01	1133.	19.04
11																
12	2.90	8.02	16.84	8.90	4.11	0.30	30.15	12.42		4.44	12.39	29.25	0.10	0.01	1933.	
13	2.09	8.59	12.99	6.01	2.55	0.23	21.78	5.96	0.70	5.56	9.68	21.90	7.67	0.01	1495.	19.08
14																18.68
15	1.56	8.23	9.00	5.01	1.79	0.13	15.93	1.67		7.02	7.86	16.55	22.70	0.01	1199.	19.02
16																
17																
18	1.58	8.67	7.65	6.50	2.21	0.29	16.65	2.39	0.70	5.53	7.86	16.48	4.09	0.01	1165.	
19	2.11	8.57	13.33	5.08	2.65	0.20	21.26	3.45	1.32	7.54	9.37	21.68	4.19	0.01	1520.	18.94
20																
21	1.78	8.47	11.62	5.20	2.16	0.24	19.22	8.74	0.40	3.00	6.97	19.11	0.20	0.01	1247.	
22	1.08	8.75	5.40	4.89	1.33	0.19	11.81	1.68	1.00	4.88	4.29	11.85	2.32	0.01	839.	18.84
23																
24																
25	2.84	8.15	18.22	6.66	3.09	0.25	28.22	10.90		3.06	14.69	28.65	0.25	0.01	1878.	
26	4.92	8.74	43.11	8.51	4.53	0.35	54.50	10.48	0.96	5.19	38.73	55.36	1.01	0.01	3767.	
27																
28	2.85	8.00	18.08	6.74	3.05	0.25	28.12	11.19		3.32	13.59	28.10	2.57	0.01	1850.	
29																
30	2.91	8.02	15.24	12.57	5.17	0.36	33.34	5.36		6.34	22.43	34.13	0.15	0.01	2333.	
31																
32																
33	2.05	8.69	10.14	6.75	2.64	0.36	20.89	6.03	1.32	4.80	9.26	21.41	3.50	0.01	1406.	18.63
51	1.38	8.62	5.64	5.82	2.22	0.22	13.90	1.55	1.32	6.08	4.42	14.37	19.17	0.01	960.	19.26
52	3.60	8.59	20.56	11.52	4.27	0.36	36.71	17.71	0.70	4.42	14.78	37.61	0.05	0.01	2398.	19.06
53	3.85	8.25	21.91	11.56	4.28	0.36	38.11	21.51		2.77	14.47	38.75	0.05	0.01	2428.	19.08
54	3.67	8.49	21.55	13.03	4.66	0.34	39.58	24.21	0.46	2.01	13.59	40.27	0.30	0.01	2474.	
55	3.39	7.79	19.92	11.00	5.67	0.33	36.92	24.27		0.81	12.80	37.88	0.05	0.01	2285.	
56	3.27	8.46	17.53	11.64	5.92	0.34	35.43	14.17	0.24	3.44	16.61	34.46	0.05	0.01	2239.	19.04
57	4.03	8.01	24.09	13.58	6.77	0.40	44.84	26.71		1.30	15.61	45.62	0.10	0.01	2771.	19.24
58	2.24	8.24	16.31	4.66	2.66	0.23	23.86	9.56		3.54	10.57	23.67	0.40	0.01	1572.	19.86
59	2.63	8.21	20.08	5.21	3.00	0.26	28.55	13.62		1.60	12.23	27.45	0.05	0.01	1780.	19.87
60	2.44	8.26	18.17	3.90	2.61	0.25	24.04	10.64		4.08	11.14	25.86	7.06	0.01	1699.	19.60

Appendix A (Continued).

WEEK#237 9/ 4/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.16							17.03								
2	2.12							8.49								
3	3.94							4.06								
4	1.86							3.05								
5	1.27							2.73								
6	2.03							2.66								
7																
8																
9																
10	1.16							2.17								
11																
12	2.59							13.27								
13	1.77							5.58								
14																
15	1.69							4.38								
16																
17																
18																
19	1.87							4.06								
20																
21	1.05							2.65								
22																
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33	1.71							3.83								
35	1.08							2.66								
51																
52	3.78							26.19								
53																
54																
55																
56	3.42							23.64								
57	3.70							28.34								
58	2.39							9.07								
59	2.81							16.37								
60	2.72							14.99								

Appendix A (Continued).

WEEK#238 9/11/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.38							11.48								
2	2.35							9.94								
3	3.68							4.71								
4	1.42							3.75								
5																
6	1.92							2.87								
7																
8																
9								2.97								
10	2.00															
11								10.20								19.08
12	2.40							10.61								
13	2.40															
14								2.39								
15	1.50															
16																
17																
18								6.49								
19	2.19															19.19
20								2.75								
21	0.96							2.15								
22	1.02															
23																
24																
25																
26																
27																
28																
29																
30																
31																
32								3.30								19.30
33	1.56							2.26								19.08
35	1.22							17.03								19.09
51	3.03							26.19								
52	3.97															
53																19.05
54																19.24
55								23.03								
56	3.37							31.89								
57	4.40							12.92								
58	2.60							12.76								
59	2.40							15.61								
60	2.74															

Appendix A (Continued).

WEEK#239 9/18/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.90							14.01								
2	2.36							9.25								
3																
4																
5																
6																
7																
8																
9																
10																
11																
12	2.21							8.57								
13																
14																
15																
16																
17																
18																19.28
19																
20																
21	1.00							2.81								19.22
22	0.95							1.65								
23																
24																
25																20.11
26																19.43
27																
28																
29																19.31
30																18.45
31																
32																
33																18.67
35	1.28							2.74								19.37
51	3.34							13.84								19.16
52	3.93							22.06								19.17
53																
54																
55																
56	3.29							17.36								19.06
57	4.29							26.65								19.24
58																19.82
59																19.84
60																19.70

Appendix A (Continued).

WEEK#240 9/25/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.69	8.27	16.55	9.41	3.60	0.41	29.97	13.07		4.70	12.39	30.16	0.30	0.02	1974.	
2	2.41	8.59	14.23	8.73	3.27	0.22	26.45	9.96	0.88	4.92	11.19	26.95	0.01	0.04	1760.	
3																
4																
5																
6																
7																
8																
9																
10																
11																
12	2.33	8.54	13.31	9.70	4.28	0.23	27.52	10.83	0.96	4.54	11.35	27.68	0.55	0.03	1796.	
13																
14																
15																
16																
17																
18	2.54	8.12	12.79	12.44	5.61	0.50	31.34	4.18		7.20	20.92	32.30	0.15	0.02	2223.	19.32
19																
20																
21	1.05	8.49	5.22	3.99	1.52	0.18	10.91	3.54	0.20	3.24	4.41	11.19	0.10	0.01	766.	19.43
22	1.15	8.03	7.05	4.16	1.45	0.18	12.84	4.21		3.86	4.30	12.37	1.36	0.13	861.	
23																
24																
25	2.73	8.17	17.55	8.48	3.43	0.20	29.66	14.66		2.70	13.27	30.63	0.05	0.02	1945.	
26																
27																
28																
29	2.40	8.65	15.64	6.82	2.94	0.25	25.65	9.86	0.24	4.06	12.08	26.24	0.40	0.04	1726.	
30	2.25	8.17	9.83	12.97	5.05	0.27	28.12	3.36		5.60	19.88	28.84	0.05	0.05	1973.	
31																
32																
33	1.45	8.61	7.21	5.55	2.53	0.30	15.59	3.00	0.72	5.14	6.33	16.19	1.62	0.04	1126.	18.85
35	1.22	8.49	5.63	5.66	2.36	0.28	13.93	2.65	0.28	6.04	4.73	13.70	0.10	0.02	981.	19.38
51	3.31	8.19	22.50	10.39	4.32	0.34	37.55	16.04		4.56	16.45	37.05	0.01	0.02	2428.	19.15
52	4.02	8.52	26.39	11.20	4.68	0.36	42.63	24.30	0.32	3.12	16.45	44.19	0.01	0.07	2754.	19.16
53	3.72	8.20	21.28	13.35	4.90	0.34	39.87	24.20		2.70	13.43	40.33	0.05	0.07	2497.	
54	2.50	8.29	15.93	5.41	4.25	0.23	25.82	17.46		3.06	5.93	26.45	0.01	0.04	1620.	
55	3.65	7.47	23.68	15.29	4.72	0.35	44.04	31.19		0.70	12.54	44.43	0.36	0.02	2672.	
56	2.98	8.31	18.32	8.48	4.25	0.26	31.31	17.28	0.28	2.32	12.08	31.96	0.05	0.05	1996.	19.05
57	4.43	7.84	26.54	14.77	7.70	0.40	49.41	31.12		0.75	17.64	49.51	0.20	0.01	3012.	19.30
58	2.53	8.12	18.27	5.46	2.86	0.21	26.80	12.57		2.64	12.23	27.44	0.15	0.04	1766.	19.85
59	2.40	8.18	16.84	3.61	2.57	0.21	24.23	11.76		1.00	11.00	23.76	0.05	0.02	1505.	19.81
60	2.89	8.19	19.56	6.77	3.20	0.24	29.77	14.80		2.56	13.17	30.53	0.64	0.04	1947.	19.70

Appendix A (Continued).

WEEK#241 10/ 2/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.75							11.90								
2	2.30							9.25								
3																
4																
5																
6																
7																
8																
9																
10																
11																
12	2.44							9.72								
13																19.15
14																
15																
16																
17																
18	1.51							3.53								
19																
20																
21																
22	1.05							2.10								19.24
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33																
34																
35																
36																
37																
38																
39																
40																
41																
42																
43																
44																
45																
46																
47																
48																
49																
50																
51																
52																
53																
54																
55																
56	3.39							16.72								18.80
57	4.16							24.71								19.33
58	2.44							9.85								19.91
59	2.36							10.10								19.90
60	2.70							11.24								19.80

Appendix A (Continued).

WEEK#242 10/ 9/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	2.49							10.89								
2	2.46							7.95								
3																
4																
5																
6																
7																
8																
9																
10																
11																
12	2.28							7.75								
13	2.27							7.01								19.12
14																
15																
16																
17																
18																
19																19.35
20																
21	1.08							2.40								
22	1.02							1.80								19.29
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33																
35	1.43							2.38								18.72
51	3.39							15.11								19.42
52	4.14							22.91								19.18
53																19.19
54																
55																
56	3.59							19.20								
57	4.52							28.03								19.09
58	2.62							11.03								19.24
59	2.49							11.17								19.89
60	2.83							14.14								
																19.78

Appendix A (Continued).

WEEK#243 10/16/81

STATION	SPEC. COND	PH	NA	CA	MG	K	TOTAL CATIONS	CL	CO3	HCO3	SO4	TOTAL ANIONS	NO3	P	TDS	WATER ELEVATION
1	3.03							12.51								
2	2.03							9.02								
3																
4																
5																
6																
7																
8																
9																
10																
11																
12	2.39							8.79								
13																
14																19.33
15																
16	1.78							6.10								
17																
18	3.64							9.25								
19																19.40
20																
21	1.78							7.12								
22	0.95							1.51								
23																19.19
24																
25																
26																20.06
27																19.40
28																
29																19.82
30																19.31
31																18.84
32																
33	1.65							3.10								
34	1.85							3.22								18.72
35	3.30							13.33								19.40
36	4.27							23.79								19.17
37																19.18
38																
39																
40	3.72							19.45								
41	4.69							27.68								19.07
42	2.73							11.31								19.27
43																19.89
44	2.89							13.54								19.89
45																19.73

APPENDIX B

NORTH-SOUTH TRANSECT DATA

Column Number	Description	Units
1	distance	m
2	infiltration rate	cm/hr
3	groundwater EC	dsm^{-1}
4	groundwater Cl	meq/l
5	surface soil EC	dsm^{-1}
6	surface soil Cl	meq/l
7	capillary fringe EC	dsm^{-1}
8	capillary fringe Cl	meq/l
9	capillary fringe	% H_2O
10	gometric mean grain size	mm
11	$\log_2$ standard deviation	

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Appendix B, Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
0.00	2.1100	1.99	12.61	0.85	1.19	1.83	5.31	5.66	0.00	0.00
7.62	0.1680	2.07	5.55	0.93	1.27	2.56	8.23	6.98	0.26	0.81
15.24	0.1270	2.16	6.31	1.09	1.73	1.96	5.87	4.98	0.41	0.84
22.86	0.5690	1.97	6.50	1.04	1.41	1.35	3.50	2.97	0.25	0.87
30.48	0.8940	2.00	6.65	0.76	0.90	0.75	1.14	0.97	0.24	0.91
38.10	0.3353	2.01	6.47	0.84	1.16	1.20	2.22	1.94	0.23	0.95
45.72	0.1829	1.66	3.95	3.98	2.37	1.65	3.30	2.91	0.23	0.93
53.34	1.5545	1.56	3.34	0.79	1.02	0.81	1.66	1.56	0.23	0.90
60.96	3.1699	1.54	3.22	0.74	0.75	1.09	2.14	1.76	0.22	0.92
68.58	0.3302	2.54	9.27	0.98	0.67	1.54	3.47	3.04	0.23	0.90
76.20	0.3007	2.86	13.04	0.87	1.19	2.08	4.98	4.06	0.22	0.90
83.82	3.2614	1.87	4.67	0.80	1.05	1.22	2.58	2.42	0.24	1.15
91.44	2.2352	1.97	4.08	0.74	0.86	1 36	2.69	2.32	0.27	1.29
99.06	1.1836	1.58	3.50	0.87	1.22	1.18	3.82	3.56	0.18	1.06
106.68	2.1996	1.54	2.96	1.99	5.61	1.91	4.86	4.30	0.27	0.88
114.30	2.9642	1.84	4.21	3.10	9.99	2.63	5.91	5.04	0.24	0.99
121.92	3.0912	1.23	2.00	4.22	14.38	3.36	6.95	4.77	0.21	1.09
129.54	3.2309	1.31	2.26	5.34	18.76	4.08	7.99	6.51	0.19	1.20
137.16	1.8796	1.25	2.54	1.84	5.07	1.09	2.04	1.95	0.16	1.31
144.78	1.0338	1.04	1.82	0.83	1.05	1.34	7.99	7.25	0.24	0.85
152.40	0.9576	1.44	2.45	0.85	1.11	0.63	0.89	0.87	0.22	0.91
160.02	0.3683	0.96	3.40	1.04	1.75	0.56	0.51	0.54	0.23	0.89
167.64	0.2057	1.42	3.03	0.92	1.55	0.75	1.10	1.03	0.21	0.95
175.26	0.4318	1.29	2.56	0.77	1.09	0.53	0.48	0.45	0.24	0.92
182.88	4.1148	1.33	2.78	0.87	1.05	0.82	1.13	0.88	0.23	0.92
190.50	1.0871	1.42	2.81	0.65	1.01	0.54	0.92	0.89	0.24	0.91
198.12	1.2852	1.31	2.61	0.86	1.95	0.37	0.40	0.40	0.29	0.99
205.74	0.7620	1.44	2.80	0.92	1.11	0.77	1.02	0.88	0.27	0.86
213.36	3.3401	1.49	3.42	0.72	0.72	1.05	2.04	1.91	0.30	0.91
220.98	0.3607	1.56	2.24	1.12	1.65	0.70	1.18	1.01	0.36	0.82
228.60	1.1354	2.20	3.43	2.54	0.97	1.29	2.93	2.28	0.24	0.92
236.22	2.5514	2.27	4.11	1.15	1.77	0.76	1.30	1.11	0.28	0.96
243.84	0.1295	2.28	3.99	1.05	1.34	0.85	1.24	0.97	0.25	0.98
251.46	0.5220	1.95	3.42	3.04	1.78	1.82	3.47	2.57	0.27	1.04
259.08	0.1270	1.83	2.59	3.72	0.89	2.99	4.14	3.39	0.32	0.98
266.70	0.4470	2.23	3.37	2.88	1.33	2.36	1.32	1.08	0.19	1.22
274.32	6.7234	2.28	3.38	2.75	1.57	2.41	3.19	2.84	0.21	1.00
281.94	0.2438	2.12	3.42	3.00	1.00	1.93	3.14	2.76	0.21	0.96
289.56	2.4511	2.38	3.31	2.80	1.04	2.40	2.04	1.92	0.24	0.95
297.18	4.8260	2.96	4.25	2.64	1.13	1.86	3.93	3.43	0.19	1.56
304.80	2.5819	2.24	2.96	2.77	1.30	2.94	3.24	2.91	0.14	1.79
312.42	1.5519	2.27	3.37	2.57	1.53	2.39	4.51	3.62	0.08	2.03
320.04	1.2040	1.95	2.96	1.20	1.39	2.60	4.02	4.76	0.06	2.09

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Appendix B, Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
327.66	0.6960	1.26	2.14	2.97	2.09	2.81	3.53	5.89	0.04	2.16
335.28	4.0208	2.30	3.47	2.85	1.39	3.69	2.58	3.51	0.02	2.22
342.90	2.3571	2.09	1.79	2.79	1.22	2.73	2.37	2.89	0.02	2.28
350.52	2.4943	2.69	3.64	2.73	1.04	1.76	2.16	2.27	0.09	1.60
358.14	2.2657	2.33	3.49	2.82	1.57	1.34	1.66	1.81	0.15	0.92
365.76	0.2794	2.56	4.49	2.78	1.30	2.60	1.32	1.87	0.16	0.76
373.38	0.4724	1.45	2.95	2.28	1.24	2.10	3.14	2.81	0.02	2.12
381.00	1.1405	2.04	3.93	2.67	4.18	1.45	1.37	1.35	0.14	1.20
388.62	3.7211	2.10	3.48	1.04	4.76	2.93	3.99	3.72	0.16	1.22
396.24	2.6416	2.06	3.34	0.97	3.88	2.20	2.83	2.79	0.15	0.98
403.86	2.0696	2.03	3.52	1.12	3.88	1.64	1.61	2.41	0.11	1.61
411.48	1.1074	2.10	4.68	0.79	1.91	1.81	2.77	2.51	0.02	3.37
419.10	2.2174	1.53	2.89	0.81	1.91	1.82	2.98	2.65	0.06	1.92
426.72	1.3894	1.52	2.93	1.01	2.10	0.98	1.24	2.45	0.15	1.20
434.34	2.9286	1.63	2.96	1.06	2.13	1.19	1.85	2.66	0.02	1.88
441.96	0.5994	1.52	2.49	0.82	2.16	1.79	0.77	2.03	0.02	2.56
449.58	1.1074	1.65	2.88	0.86	2.53	1.27	2.43	3.48	0.02	2.50
457.20	1.1074	1.49	2.84	0.62	1.14	0.91	1.72	1.65	0.01	2.44
464.82	0.6655	1.63	3.09	0.86	1.12	0.82	1.66	1.40	0.11	1.36
472.44	0.8217	1.72	3.09	0.71	1.35	1.07	2.04	1.96	0.22	1.02
480.06	0.9779	1.49	2.56	0.76	1.33	0.96	2.04	2.34	0.04	2.61
487.68	1.1341	1.15	2.33	0.78	1.22	0.98	1.78	3.07	0.03	2.43
495.30	1.2903	1.29	1.68	0.82	0.82	1.07	1.78	2.55	0.02	2.49
502.92	1.4465	1.26	1.66	0.75	0.96	0.81	1.24	1.24	0.02	2.24
510.54	1.6027	1.24	1.64	0.69	0.72	0.35	0.40	0.37	0.18	1.13
518.16	1.9507	1.21	1.63	0.76	0.62	0.69	0.86	0.85	0.13	1.07
525.78	1.7755	2.01	3.50	0.65	0.83	0.90	1.47	1.33	0.18	0.92
533.40	0.7315	1.79	3.08	1.42	3.09	0.61	0.59	0.55	0.14	1.08
541.02	1.3614	1.64	2.83	1.98	7.16	0.44	0.80	0.70	0.22	0.98
548.64	1.0363	1.69	3.14	1.57	4.76	0.76	1.20	0.91	0.21	0.99
556.26	0.5867	1.70	3.13	1.16	2.36	1.08	1.59	1.12	0.24	1.04
563.88	2.1184	1.65	3.05	1.74	3.50	0.99	1.24	0.92	0.28	1.09
571.50	0.8458	1.44	3.15	0.81	1.09	0.89	0.88	0.72	0.26	1.13
579.12	3.1394	1.24	2.22	1.13	2.20	1.09	1.38	1.09	0.23	1.16
586.74	1.7145	1.16	2.00	0.87	1.55	0.93	0.99	0.79	0.22	1.78
594.36	1.1582	1.21	1.97	0.79	1.09	1.29	1.95	4.91	0.30	1.37
601.98	14.1046	1.35	2.36	0.82	1.22	0.45	0.39	0.34	0.01	1.29
609.60	1.8059	1.50	2.44	1.17	2.60	0.56	0.51	0.39	0.33	1.22
617.22	4.2520	1.19	2.07	1.03	1.43	0.62	0.58	0.50	0.31	1.25
624.84	5.9131	1.22	2.13	1.37	1.45	0.63	0.49	0.41	0.30	1.23
632.46	4.7473	1.24	2.00	0.70	1.00	0.40	0.41	0.37	0.25	0.97
640.08	6.0909	1.30	2.00	0.63	0.72	0.47	0.47	0.40	0.36	1.11

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Appendix B, Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
647.70	3.4442	1.44	2.06	1.25	2.09	0.61	0.75	0.59	0.46	0.97
655.32	5.3594	1.23	1.80	3.33	3.02	1.07	1.89	1.47	0.30	1.10
662.94	4.3028	1.15	1.82	1.35	2.23	2.42	3.26	2.60	0.21	1.18
670.56	6.3551	1.17	1.85	0.97	2.10	0.66	0.78	0.60	0.22	1.06
678.18	8.4074	1.08	1.81	1.20	2.91	0.75	0.99	0.79	0.29	1.12
685.80	6.8072	0.95	1.52	0.75	0.92	0.55	0.85	0.68	0.23	1.14
693.42	5.5042	0.93	1.40	0.65	0.83	0.98	0.78	0.59	0.23	1.05
701.04	1.9863	0.94	1.31	1.42	3.69	0.48	0.55	0.42	0.20	1.24
708.66	5.7480	0.91	1.49	2.16	0.12	0.62	0.75	0.70	0.28	1.14
716.28		0.94	1.46	0.88	1.27	0.47	0.72	0.52	0.21	0.89
723.90		1.45	2.10	1.11	1.55	0.49	0.52	0.45	0.37	1.11
731.52		1.47	2.03	1.07	1.79	0.41	0.39	0.31	0.37	1.15
739.14		2.15	7.02	0.63	0.12	0.37	0.25	0.18	0.35	1.21
746.76		2.85	11.85	0.86	1.32	0.56	0.47	0.42	0.34	1.16
754.38		2.70	11.86	1.66	1.07	0.64	0.86	0.70	0.27	1.31
762.00		2.55	11.87	0.83	0.10	1.06	1.38	1.50	0.22	1.14
769.62									0.05	3.84
777.24									0.12	2.95

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APPENDIX C

BOREHOLE S-3 DATA

Column Number	Description	Units
1	depth	m
2	EC	millisiemens
3	Cl concentration	meq/l
4	Cl corrected for % H_2O	meq/l
5	geometric mean grain size	mm
6	$\log_2$ standard deviation	

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Appendix C, Continued.

(1)	(2)	(3)	(4)	(5)	(6)
0.3048	1.0300	1.00	0.43	0.05	2.26
0.6096	0.9260	1.35	0.74	0.12	0.98
0.9144	0.8660	1.10	0.69	0.19	0.95
1.2192	1.3800	1.42	1.49	0.13	0.91
1.5240	1.2300	1.81	1.22	0.21	0.94
1.8288	1.0100	1.40	1.23	0.21	0.90
2.1336	1.0800	1.42	1.34	0.22	0.90
2.4384	0.9780	1.22	1.03	0.21	1.01
2.7432	1.0600	1.36	1.19	0.27	0.97
3.0480	1.2800	1.92	1.81	0.32	1.08
3.3528	1.4900	2.00	2.10	0.34	1.08
3.6576	1.6900	1.61	2.06	0.35	1.07
3.9624	1.6600	1.58	1.73	0.34	1.07
4.2672	1.4100	1.91	0.97	0.32	1.08
4.5720	1.8400	1.67	2.74	0.36	1.15
4.8768	2.0500	1.50	1.92	0.35	1.01
5.1816	2.0600	1.31	2.23	0.34	0.94
5.4864	1.8600	1.35	3.50	0.39	0.89
5.7912	1.4900	2.19	2.61	0.27	0.86
6.0960	1.5800	2.34	2.76	0.26	0.91
6.4008	2.3100	1.56	2.65	0.22	0.98
6.7056	2.2800	1.50	2.73	0.23	0.91
7.0104	0.8300	1.14	2.98	0.22	0.88
7.3152	1.1900	1.27	2.13	0.23	0.93
7.6200	2.2200	1.26	3.22	0.25	0.92
7.9248	2.6200	1.00	2.31	0.24	0.91
8.2296	4.4700	0.47	3.47	0.03	0.97
8.5344	4.0700	0.59	3.00	0.02	1.04
8.8392	2.4400	1.01	1.91	0.32	1.10
9.1440	2.3700	1.00	1.61	0.34	1.23
9.4488	2.5400	1.36	2.00	0.44	1.15
9.7536	1.5300	1.52	1.75	0.36	1.22
10.0584	1.6100	1.67	1.28	0.54	1.21
10.3632	2.1600	1.14	2.26	0.34	1.20
10.6680	1.1600	1.21	2.03	0.33	1.13
10.9728	3.1400	0.71	0.62	0.37	1.23
11.2776	1.2300	0.77	2.11	0.36	1.17
11.5824	2.7000	0.97	0.36	0.34	1.26
11.8872	3.3700	0.79	1.98	0.32	1.18
12.1920	1.9500	0.56	1.92	0.33	1.27

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Appendix C, Continued.

(1)	(2)	(3)	(4)	(5)	(6)
12.4968	3.3800	0.44	1.04	0.34	1.34
12.8016	2.5900	0.74	1.76	0.37	1.21
13.1064	2.5800	0.85	1.53	0.35	1.25
13.4112	2.5400	0.82	1.77	0.36	1.24
13.7160	2.7000	0.97	0.97	0.34	1.28
14.0208	1.4300	1.21	2.19	0.34	1.11
14.3256	2.1600	0.60	2.07	0.33	1.09
14.6304	1.7900	0.73	2.06	0.31	1.05
14.9352	1.5800	1.35	2.09	0.35	1.08
15.2400	2.0200	0.82	1.48	0.32	1.15
15.5448	1.7900	1.01	2.31	0.30	1.04
15.8496	1.6900	1.91	1.89	0.27	0.98
16.1544	1.2800	1.31	2.07	0.25	0.94
16.4592	1.7800	1.81	2.18	0.32	1.08
16.7640	1.8600	0.87	2.39	0.31	1.06
17.0688	1.9400	0.87	1.49	0.30	1.06
17.3736	1.1000	1.22	1.92	0.30	1.05
17.6784	1.4000	1.38	1.70	0.29	1.03
17.9832	1.5100	1.42	1.93	0.30	1.11
18.2880	1.5800	1.72	1.70	0.29	1.07
18.5928	0.9950	1.06	1.57	0.27	1.04
18.8976	1.2100	1.38	0.97	0.25	0.94
19.2024	1.5200	1.63	1.68	0.29	1.07
19.5072	1.7300	1.74	1.86	0.29	1.08
19.8120	1.4200	1.35	2.03	0.31	1.06
20.1168	1.3300	1.52	2.34	0.29	1.13
20.4216	1.3200	1.58	1.91	0.31	1.21
20.7264	1.4800	2.13	2.25	0.27	1.30
21.0312	0.9880	1.10	1.58	0.03	3.80
21.3360	0.9850	1.11	1.61	0.05	3.19
21.6408	1.2600	1.26	1.72	0.29	1.12
21.9456	1.7200	1.72	0.96	0.31	1.19
22.2504	1.3400	1.33	1.74	0.31	1.15
22.5552	1.7100	1.76	1.65	0.27	1.07
22.8600	1.0500	1.27	1.66	0.27	1.03
23.1648	1.0300	1.10	1.87	0.30	1.10
23.4696	1.5500	1.58	1.79	0.30	1.06
23.7744	1.5200	1.56	1.84	0.29	1.03
24.0792	1.2200	1.27	1.23	0.34	1.10
24.3840	1.2300	1.27	1.33	0.34	1.10
24.6888	1.2400	1.44	1.27	0.33	1.13
24.9936	1.4300	1.72	2.04	0.33	1.18

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Appendix C, Continued.

(1)	(2)	(3)	(4)	(5)	(6)
25.2984	1.7100	1.81	2.05	0.32	1.18
25.6032	1.5800	1.21	1.55	0.30	1.20
25.9080	1.4300	1.42	1.38	0.29	1.13
26.2128	1.4500	1.52	2.45	0.36	1.14
26.5176	1.6600	1.72	1.69	0.34	1.21
26.8224	1.5600	1.60	1.77	0.33	1.16
27.1272	1.7500	1.27	2.02	0.35	1.15
27.4320	1.6800	1.63	1.75	0.32	1.16

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3/8"

EPA-287 (Cin.)
(4-76)

APPENDIX D

BOREHOLE S-4DATA

Column Number	Description	Units
1	depth	m
2	EC	millisiemens
3	Cl concentration	meq/l
4	geometric mean grain size	mm
5	$\log_2$ standard deviation	

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TOP OF IMAGE AREA
DROPPED HEAD: BEGIN SECTIONS HERE

Appendix D, Continued.

(1)	(2)	(3)	(4)	(5)
0.9144	7.0200	14.10	0.34	1.13
1.2192	5.1400	12.21	0.48	1.17
1.5240	4.9000	14.94	0.40	1.00
1.8288	4.2200	5.45	0.51	0.99
2.1336	9.2300	35.00	1.36	2.49
2.4384	4.5000	14.51	0.53	0.96
2.7432	3.9000	15.79	0.56	1.01
3.0480	6.0300	20.50	0.54	1.17
3.3528	5.4200	16.76	0.88	1.72
3.6576	5.3600	16.29	1.03	1.89
3.9624	4.2400	12.54	1.27	2.13
4.2672	3.8100	14.28	0.66	1.48
4.5720	3.3300	11.67	0.46	1.20
4.8768	4.7300	15.82	0.48	1.16
5.1816	5.4600	15.60	0.73	1.51
5.4864	4.8000	13.90	0.76	1.94
5.7912	3.3500	10.88	0.41	1.20
6.0960	2.0100	2.84	0.72	1.92
6.4008	3.6700	1.94	0.04	2.61
6.7056	5.3700	8.80	0.06	3.30
7.0104	5.4200	12.39	0.03	3.53
7.3152	4.3700	7.26	0.02	3.37
7.6200	4.5000	3.72	0.01	3.20
7.9248	4.0800	6.75	0.01	3.04
8.2296	4.9500	11.53	0.21	2.87
8.5344	5.8000	7.84	0.17	2.71
8.8392	4.1900	11.50	0.48	2.09
9.1440	6.0200	14.10	0.54	2.83
9.4488	5.2200	9.98	0.29	0.94
9.7536	5.3200	12.75	0.40	1.22
10.0584	4.6400	11.02	0.34	1.01
10.3632	5.1200	12.04	0.31	0.98
10.6680	5.3700	15.15	0.31	0.88
10.9728	5.1900	10.42	0.36	1.01
11.2776	5.9900	6.67	0.33	0.97
11.5824	5.4000	13.90	0.34	0.95
11.8872	4.8400	5.69	0.28	0.79
12.1920	4.2200	9.56	0.44	1.27
12.4968	5.2500	8.11	0.04	3.61
12.8016	5.1100	11.20	0.05	3.79

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EPA-287 (Cin.)
(4-76)

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Appendix D, Continued.

(1)	(2)	(3)	(4)	(5)
13.1064	4.8900	10.88	0.04	3.97
13.4112	3.8600	9.82	0.02	4.15
13.7160	5.9900	13.51	0.20	1.25
14.0208	4.7700	4.99	0.60	1.61
14.3256	5.6300	7.18	0.30	0.91
14.6304	6.1300	7.57	0.27	1.02
14.9352	5.0900	10.27	0.29	0.90
15.2400	5.9200	8.38	0.31	1.01
15.5448	5.4600	19.08	0.32	0.93
15.8496	5.3000	15.37	0.38	1.16
16.1544	5.5600	12.75	0.51	1.50
16.4592	5.1400	14.10	0.70	2.08
16.7640	7.5700	25.08	0.40	1.15
17.0688	5.6300	20.50	0.41	1.10
17.3736	5.3600	7.57	0.51	1.15
17.6784	4.5300	11.04	0.44	1.20
17.9832	5.0400	9.38	0.37	0.92
18.2880	5.1200	16.76	0.50	1.36
18.5928	6.0600	10.73	1.22	2.29
18.8976	5.8600	19.08	0.51	1.47
19.2024	4.4600	14.07	0.43	1.18
19.5072	4.4700	14.48	0.38	1.04
19.8120	4.6400	16.25	0.77	2.01
20.1168	5.8000	14.51	0.75	1.87
20.4216	4.8800	14.10	0.66	1.64
20.7264	4.1800	17.97	1.04	2.38
21.0312	5.6800	18.81	1.06	2.83
21.3360	6.5300	26.57	0.46	1.34
21.6408	4.4000	15.15	0.41	1.32
21.9456	4.8400	20.50	0.30	0.99
22.2504	5.3000	15.15	0.31	0.97
22.5552	5.7000	22.68	0.44	1.43
22.8600	6.3700	28.14	0.71	1.97
23.1648	4.1200	18.50	0.44	1.26
23.4696	3.9900	18.50	1.55	2.92
23.7744	5.5300	21.72	1.11	2.52
24.0792	4.5700	21.10	0.75	1.99
24.3840	4.3800	22.30	0.84	2.16
24.6888	4.5600	25.03	1.29	2.53
24.9936	2.5700	11.34	0.52	2.82
25.2984	4.6700	23.97	0.49	2.67
25.6032	4.9700	24.02	1.52	2.52

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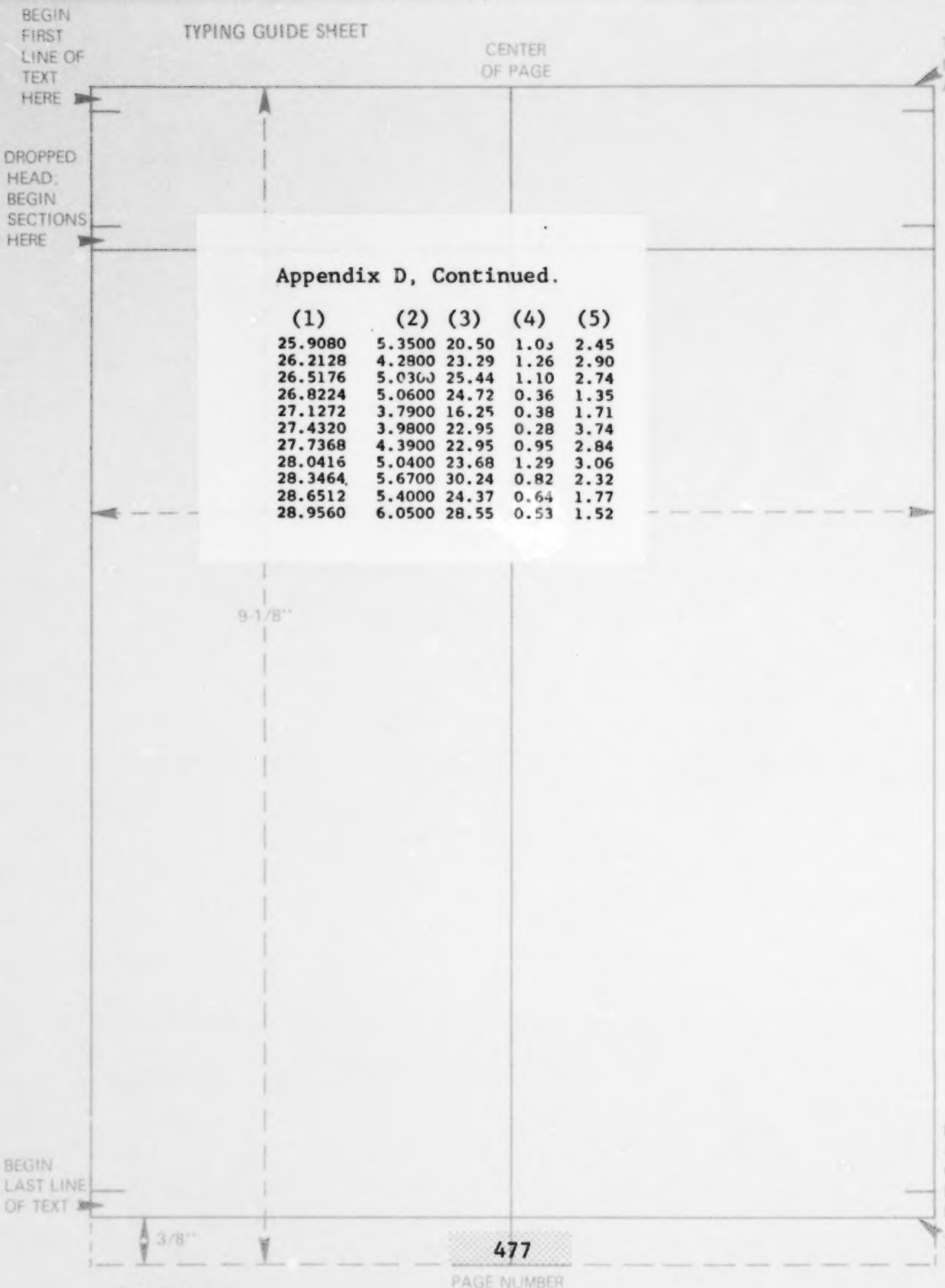
BOTTOM OF IMAGE AREA, OUTSIDE DIMENSION FOR TABLES AND ILLUSTRATIONS

EPA-287 (Cin.)
(4-76)



Appendix D, Continued.

(1)	(2)	(3)	(4)	(5)
25.9080	5.3500	20.50	1.03	2.45
26.2128	4.2800	23.29	1.26	2.90
26.5176	5.0300	25.44	1.10	2.74
26.8224	5.0600	24.72	0.36	1.35
27.1272	3.7900	16.25	0.38	1.71
27.4320	3.9800	22.95	0.28	3.74
27.7368	4.3900	22.95	0.95	2.84
28.0416	5.0400	23.68	1.29	3.06
28.3464	5.6700	30.24	0.82	2.32
28.6512	5.4000	24.37	0.64	1.77
28.9560	6.0500	28.55	0.53	1.52

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EPA-287 (Cin.) (4-76)
PAGE NUMBER
478
TOM OF GE AREA.
SIDE ENSION
TABLES
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APPENDIX E
DAILY WATER LEVEL AT WELL DW12
datum 1400m above MSL

Year 1977

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1									19.06	19.23	19.21	19.01
2									19.03	19.21	19.17	19.01
3									19.03	19.20	19.16	19.01
4									19.03	19.19	19.15	19.01
5									19.03	19.18	19.15	19.01
6									19.03	19.17	19.14	19.01
7									19.04	19.15	19.13	19.01
8									19.06	19.15	19.11	19.01
9									19.11	19.15	19.10	19.01
10									19.23	19.14	19.08	19.01
11									19.44	19.13	19.08	19.01
12								19.16	19.65	19.12	19.08	19.01
13								19.15	19.56	19.12	19.08	19.01
14								19.13	19.51	19.12	19.07	19.01
15								19.13	19.46	19.11	19.07	19.01
16								19.13	19.35	19.10	19.05	19.01
17								19.13	19.35	19.10	19.05	19.01
18								19.13	19.33	19.09	19.04	19.02
19								19.16	19.30	19.26	19.04	19.02
20								19.16	19.29	19.26	19.04	19.02
21								19.15	19.27	19.26	19.03	19.02
22								19.15	19.25	19.31	19.03	19.02
23								19.16	19.25	19.34	19.02	19.02
24								19.18	19.23	19.36	19.02	19.02
25								19.19	19.26	19.34	19.02	19.02
26								19.21	19.25	19.31	19.02	19.02
27								19.23	19.34	19.27	19.02	19.02
28								19.24	19.31	19.26	19.01	19.02
29								19.22	19.27	19.24	19.01	19.02
30								19.20	19.25	19.23	19.02	19.02
31								19.18	19.23	19.17		19.03

Year 1978

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	19.03	19.01	19.02	19.05	19.50	19.35	19.56	19.39	19.62	19.34	19.48	19.33
2	19.03	19.01	19.04	19.05	19.48	19.34	19.54	19.39	19.57	19.33	19.47	19.33
3	19.03	19.01	19.04	19.06	19.47	19.33	19.48	19.55	19.52	19.32	19.44	19.33
4	19.03	19.01	19.04	19.37	19.46	19.32	19.47	19.72	19.47	19.32	19.44	19.33
5	19.03	19.01	19.04	19.37	19.45	19.32	19.48	19.60	19.44	19.31	19.44	19.33
6	19.03	19.01	19.04	19.37	19.44	19.33	19.51	19.54	19.42	19.31	19.43	19.33
7	19.03	19.01	19.04	19.48	19.41	19.34	19.54	19.48	19.39	19.29	19.43	19.33
8	19.06	19.02	19.04	19.47	19.36	19.34	19.57	19.61	19.37	19.29	19.42	19.33
9	19.06	19.03	19.04	19.45	19.33	19.35	19.59	19.69	19.61	19.27	19.40	19.33
10	19.07	19.03	19.04	19.41	19.33	19.35	19.62	19.62	19.63	19.26	19.39	19.33
11	19.07	19.03	19.04	19.40	19.31	19.34	19.58	19.56	19.62	19.23	19.38	19.33
12	19.05	19.03	19.04	19.40	19.30	19.46	19.53	19.51	19.55	19.22	19.37	19.32
13	19.04	19.03	19.04	19.40	19.30	19.47	19.51	19.48	19.63	19.26	19.36	19.32
14	19.03	19.03	19.04	19.39	19.40	19.57	19.47	19.43	19.70	19.30	19.34	19.32
15	19.02	19.03	19.04	19.37	19.37	19.48	19.50	19.41	19.57	19.33	19.33	19.31
16	19.01	19.03	19.04	19.35	19.48	19.46	19.54	19.37	19.59	19.37	19.33	19.31
17	19.01	19.03	19.04	19.33	19.56	19.46	19.58	19.37	19.54	19.41	19.33	19.31
18	19.01	19.03	19.04	19.31	19.61	19.47	19.62	19.47	19.48	19.45	19.33	19.31
19	19.00	19.03	19.04	19.30	19.58	19.59	19.52	19.47	19.47	19.48	19.33	19.31
20	19.00	19.03	19.04	19.27	19.55	19.58	19.43	19.47	19.41	19.55	19.33	19.30
21	19.00	19.03	19.04	19.26	19.51	19.56	19.55	19.57	19.37	19.58	19.33	19.31
22	19.00	19.03	19.04	19.25	19.51	19.55	19.50	19.49	19.37	19.61	19.33	19.31
23	19.00	19.03	19.04	19.24	19.48	19.52	19.37	19.47	19.41	19.65	19.33	19.31
24	19.00	19.03	19.04	19.22	19.46	19.49	19.59	19.46	19.41	19.68	19.33	19.31
25	19.00	19.03	19.04	19.22	19.44	19.48	19.57	19.46	19.41	19.65	19.33	19.31
26	19.00	19.03	19.04	19.32	19.41	19.48	19.52	19.46	19.38	19.61	19.33	19.30
27	19.01	19.02	19.04	19.73	19.40	19.43	19.49	19.46	19.37	19.57	19.33	19.30
28	19.01	19.02	19.04	19.66	19.40	19.64	19.48	19.63	19.37	19.55	19.33	19.30
29	19.01		19.05	19.61	19.37	19.63	19.45	19.63	19.36	19.53	19.33	19.30
30	19.01		19.05	19.54	19.37	19.62	19.45	19.64	19.35	19.51	19.33	19.30
31	19.01		19.05		19.36		19.39	19.65		19.50		19.30

Year 1979

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	19.25	19.22	19.19	19.23	19.51	19.47	19.56	19.62	19.40	19.40	19.33	19.25
2	19.25	19.22	19.19	19.23	19.50	19.51	19.54	19.58	19.38	19.38	19.32	19.25
3	19.25	19.22	19.18	19.32	19.48	19.51	19.51	19.57	19.45	19.38	19.32	19.25
4	19.24	19.22	19.18	19.44	19.47	19.50	19.51	19.56	19.67	19.35	19.31	19.25
5	19.24	19.22	19.17	19.55	19.47	19.49	19.51	19.53	19.55	19.34	19.31	19.25
6	19.24	19.22	19.17	19.65	19.46	19.48	19.50	19.51	19.50	19.32	19.29	19.25
7	19.24	19.22	19.17	19.66	19.45	19.46	19.50	19.49	19.46	19.31	19.29	19.24
8	19.24	19.22	19.17	19.62	19.44	19.46	19.50	19.51	19.43	19.29	19.29	19.24
9	19.23	19.22	19.16	19.59	19.45	19.47	19.49	19.51	19.40	19.27	19.29	19.24
10	19.23	19.22	19.16	19.56	19.44	19.46	19.48	19.51	19.38	19.27	19.28	19.24
11	19.23	19.22	19.16	19.52	19.64	19.44	19.49	19.50	19.51	19.28	19.28	19.24
12	19.23	19.22	19.16	19.48	19.72	19.91	19.72	19.48	19.54	19.32	19.28	19.24
13	19.23	19.22	19.16	19.48	19.64	19.69	20.07	19.46	19.47	19.32	19.28	19.23
14	19.23	19.22	19.16	19.46	19.60	19.67	20.02	19.53	19.51	19.32	19.28	19.23
15	19.23	19.23	19.16	19.45	19.56	19.62	19.93	19.73	19.57	19.30	19.28	19.23
16	19.23	19.23	19.17	19.44	19.54	19.60	19.78	19.63	19.49	19.29	19.28	19.23
17	19.23	19.23	19.17	19.44	19.53	19.56	19.70	19.57	19.44	19.60	19.28	19.23
18	19.22	19.23	19.17	19.43	19.51	19.53	19.66	19.52	19.40	19.69	19.28	19.23
19	19.22	19.23	19.17	19.42	19.50	19.50	19.62	19.49	19.37	19.83	19.28	19.23
20	19.22	19.22	19.18	19.41	19.49	19.49	19.60	19.46	19.35	19.90	19.27	19.23
21	19.22	19.23	19.19	19.41	19.49	19.51	19.58	19.44	19.33	19.70	19.27	19.23
22	19.22	19.23	19.19	19.40	19.48	19.49	19.56	19.42	19.31	19.58	19.27	19.23
23	19.22	19.23	19.20	19.41	19.47	19.49	19.53	19.47	19.30	19.53	19.27	19.23
24	19.22	19.21	19.20	19.56	19.43	19.46	19.51	19.61	19.29	19.48	19.26	19.23
25	19.22	19.20	19.21	19.72	19.40	19.45	19.49	19.66	19.27	19.44	19.26	19.23
26	19.22	19.20	19.21	19.63	19.39	19.81	19.56	19.61	19.26	19.42	19.26	19.23
27	19.22	19.20	19.21	19.58	19.39	19.84		19.55	19.26	19.40	19.26	19.24
28	19.22	19.19	19.21	19.56	19.39	19.75		19.49	19.38	19.38	19.26	19.23
29	19.22		19.22	19.54	19.39	19.65		19.45	19.42	19.37	19.26	19.24
30	19.22		19.22	19.52	19.39	19.59	19.72	19.43	19.42	19.35	19.26	19.24
31	19.22		19.22		19.40		19.65	19.41		19.34		19.24

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TOP OF IMAGE AREA
3/8"
EPA-287 (Cin.) (4-76)
PAGE NUMBER
TOM OF GE AREA. TSIDE ENSION FOR TABLES AND ILLUS- TRATIONS

APPENDIX E, Continued.

Year 1980

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	19.27	19.22	19.21	19.28	19.67	19.67	19.58	19.63	19.38	19.44	19.37	19.33
2	19.26	19.22	19.21	19.29	19.60	19.76	19.58	19.52	19.37	19.40	19.37	19.34
3	19.26	19.22	19.22	19.28	19.58	19.61	19.58	19.49	19.37	19.39	19.36	19.35
4	19.26	19.22	19.22	19.28	19.58	19.60	19.56	19.46	19.41	19.37	19.36	19.35
5	19.26	19.22	19.21	19.28	19.56	19.62	19.54	19.44	19.49	19.36	19.37	19.36
6	19.26	19.22	19.21	19.28	19.55	19.59	19.52	19.45	19.48	19.35	19.37	19.36
7	19.26	19.23	19.21	19.28	19.53	19.56	19.50	19.45	19.47	19.33	19.37	19.36
8	19.26	19.22	19.21	19.29	19.52	19.53	19.50	19.60	19.45	19.32	19.37	19.36
9	19.25	19.22	19.21	19.32	19.51	19.52	19.51	19.48	19.44	19.32	19.37	19.36
10	19.24	19.22	19.21	19.39	19.49	19.51	19.63	19.44	19.47	19.31	19.38	19.35
11	19.23	19.22	19.22	19.42	19.48	19.51	19.63	19.41	19.48	19.31	19.38	19.34
12	19.23	19.22	19.22	19.45	19.47	19.50	19.62	19.39	19.48	19.30	19.38	19.34
13	19.23	19.22	19.21	19.44	19.45	19.49	19.62	19.39	19.46	19.30	19.38	19.34
14	19.23	19.22	19.22	19.45	19.45	19.76	19.59	19.38	19.44	19.30	19.39	19.34
15	19.23	19.22	19.23	19.48	19.44	19.61	19.87	19.39	19.41	19.30	19.39	19.34
16	19.23	19.22	19.23	19.52	19.42	19.57	19.78	19.39	19.40	19.30	19.39	19.35
17	19.23	19.22	19.23	19.57	19.42	19.55	19.65	19.38	19.38	19.30	19.39	19.35
18	19.23	19.22	19.24	19.96	19.41	19.53	19.60	19.37	19.37	19.30	19.38	19.35
19	19.23	19.22	19.25	20.14	19.40	19.56	19.56	19.37	19.36	19.30	19.36	19.35
20	19.22	19.22	19.25	19.73	19.40	19.64	19.53	19.36	19.35	19.30	19.35	19.35
21	19.22	19.22	19.25	19.63	19.55	19.65	19.50	19.36	19.34	19.31	19.35	19.36
22	19.22	19.22	19.26	19.58	19.70	19.63	19.48	19.35	19.32	19.32	19.34	19.36
23	19.22	19.22	19.26	19.55	19.56	19.60	19.49	19.34	19.31	19.33	19.34	19.36
24	19.22	19.21	19.26	19.52	19.52	19.81	19.83	19.33	19.31	19.33	19.34	19.35
25	19.22	19.21	19.26	19.50	19.50	19.96	19.66	19.32	19.33	19.34	19.33	19.36
26	19.22	19.21	19.26	19.49	19.48	19.73	19.56	19.31	19.77	19.36	19.33	19.36
27	19.22	19.22	19.26	19.47	19.47	19.67	19.51	19.30	19.57	19.37	19.33	19.36
28	19.22	19.22	19.25	19.47	19.50	19.67	19.48	19.54	19.50	19.37	19.33	19.36
29	19.22	19.22	19.25	19.76	19.51	19.64	19.46	19.60	19.47	19.37	19.33	19.36
30	19.22		19.26	19.70	19.52	19.61	19.44	19.48	19.47	19.37	19.33	19.36
31	19.22		19.27		19.53		19.81	19.41		19.37		19.36

Year 1981

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	19.33	19.24	19.24	19.50	19.18	19.20	19.45	19.36	19.07	19.37		
2	19.33	19.24	19.24	19.47	19.17	19.28	19.45	19.33	19.07	19.30		
3	19.33	19.24	19.24	19.45	19.17	19.34	19.41	19.30	19.07	19.27		
4	19.33	19.24	19.24	19.42	19.16	19.36	19.38	19.27	19.07	19.25		
5	19.33	19.24	19.24	19.40	19.16	19.61	19.36	19.25	19.07	19.23		
6	19.32	19.24	19.24	19.38	19.15	19.81	19.38	19.23	19.07	19.22		
7	19.33	19.24	19.24	19.37	19.15	19.97	19.42	19.23	19.07	19.21		
8	19.33	19.24	19.23	19.35	19.15	19.71	19.44	19.23	19.07	19.20		
9	19.33	19.24	19.23	19.35	19.15	19.59	19.41	19.21	19.07	19.19		
10	19.33	19.24	19.24	19.33	19.15	19.55	19.39	19.19	19.07	19.19		
11	19.33	19.24	19.24	19.31	19.15	19.49	19.41	19.17	19.07	19.18		
12	19.33	19.23	19.25	19.30	19.15	19.44	19.37	19.16	19.08	19.17		
13	19.32	19.23	19.25	19.29	19.14	19.40	19.33	19.16	19.12	19.17		
14	19.31	19.23	19.26	19.27	19.19	19.36	19.31	19.15	19.14	19.16		
15	19.30	19.24	19.26	19.26	19.26	19.32	19.34	19.15	19.14	19.16		
16	19.29	19.24	19.26	19.25	19.30	19.29	19.42	19.14	19.14	19.16		
17	19.28	19.24	19.27	19.24	19.37	19.27	19.46	19.14	19.17	19.70		
18	19.28	19.24	19.27	19.23	19.79	19.26	19.44	19.13	19.21	19.40		
19	19.27	19.24	19.30	19.22	20.12	19.25	19.40	19.12	19.18	19.32		
20	19.27	19.24	19.39	19.22	19.67	19.23	19.39	19.12	19.17	19.30		
21	19.26	19.24	19.51	19.21	19.53	19.21	19.38	19.11	19.17	19.31		
22	19.26	19.24	19.67	19.21	19.46	19.19	19.38	19.10	19.17	19.32		
23	19.26	19.24	19.95	19.20	19.40	19.17	19.43	19.10	19.16	19.31		
24	19.26	19.24	19.87	19.20	19.37	19.16	19.51	19.08	19.15	19.30		
25	19.26	19.24	19.83	19.20	19.34	19.17	19.56	19.08	19.15	19.30		
26	19.26	19.24	19.76	19.19	19.31	19.50	19.63	19.08	19.15	19.29		
27	19.25	19.24	19.69	19.19	19.32	19.51	19.66	19.08	19.18			
28	19.25	19.24	19.64	19.19	19.26	19.52	19.54	19.08	19.18			
29	19.25		19.59	19.19	19.24	19.44	19.50	19.08	19.19			
30	19.25		19.56	19.18	19.23	19.42	19.45	19.08	19.18			
31	19.25		19.53		19.22		19.40	19.07				

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TYPING GUIDE SHEET
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TOP OF IMAGE AREA

APPENDIX F
DAILY WATER LEVEL AT WELL DW54
Year 1980 datum 1400m above MSL

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1		19.13	19.14	19.20	19.50	19.46	19.46	19.74	19.32	19.33	19.21	19.26
2		19.13	19.14	19.21	19.47	19.46	19.44	19.62	19.33	19.31	19.21	19.26
3		19.13	19.14	19.21	19.44	19.50	19.53	19.57	19.33	19.30	19.21	19.26
4		19.13	19.15	19.21	19.44	19.58	19.47	19.53	19.34	19.29	19.21	19.26
5		19.13	19.15	19.21	19.38	19.66	19.44	19.52	19.34	19.27	19.21	19.26
6		19.13	19.15	19.21	19.38	19.65	19.42	19.48	19.35	19.25	19.21	19.26
7		19.13	19.15	19.21	19.38	19.60	19.40	19.46	19.36	19.24	19.21	19.26
8		19.14	19.15	19.21	19.36	19.53	19.40	19.49	19.36	19.24	19.21	19.26
9		19.14	19.15	19.21	19.36	19.48	19.44	19.57	19.36	19.23	19.21	19.27
10		19.14	19.15	19.21	19.36	19.48	19.46	19.54	19.37	19.23	19.26	19.27
11		19.14	19.15		19.36	19.48	19.56	19.48	19.39	19.22	19.26	19.27
12		19.13	19.16		19.35	19.48	19.49	19.49	19.40	19.21	19.26	19.27
13		19.13	19.16		19.35	19.48	19.48	19.56	19.39	19.21	19.26	19.27
14		19.13	19.16		19.35	19.59	19.43	19.60	19.37	19.21	19.26	19.27
15		19.13	19.16		19.34	19.57	19.60	19.58	19.33	19.22	19.26	19.27
16		19.13	19.16		19.34	19.53	19.65	19.56	19.32	19.22	19.26	19.27
17		19.13	19.16		19.34	19.53	19.57	19.52	19.32	19.23	19.26	19.27
18		19.13	19.18		19.33	19.49	19.49	19.49	19.32	19.23	19.26	19.27
19		19.13	19.18		19.33	19.47	19.44	19.49	19.29	19.24	19.26	19.27
20		19.13	19.18		19.34	19.63	19.41	19.49	19.28	19.24	19.26	19.27
21		19.13	19.18	19.37	19.40	19.77	19.39	19.49	19.27	19.24	19.26	19.27
22		19.13	19.19	19.36	19.54	19.68	19.40	19.49	19.25	19.24	19.26	19.28
23		19.13	19.19	19.35	19.50	19.54	19.43	19.48	19.26	19.23	19.26	19.28
24		19.13	19.19	19.35	19.46	19.58	19.44	19.47	19.26	19.23	19.26	19.27
25		19.13	19.20	19.34	19.44	19.74	19.47	19.46	19.26	19.23	19.26	19.27
26		19.14	19.20	19.33	19.41	19.60	19.48	19.45	19.69	19.23	19.25	19.27
27		19.14	19.20	19.32	19.41	19.55	19.50	19.45	19.52	19.23	19.25	19.27
28		19.14	19.20	19.32	19.41	19.51	19.52	19.51	19.42	19.22	19.25	19.27
29		19.14	19.20	19.46	19.41	19.48	19.57	19.77	19.37	19.22	19.25	19.27
30			19.20	19.55	19.54	19.47	19.54	19.66	19.35	19.22	19.25	19.27
31			19.20		19.50		19.58	19.58		19.22		19.27

APPENDIX F, Continued.

Year 1981

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	19.27	19.24	19.23	19.37	19.23	19.13	19.18	19.18		19.04		
2	19.27	19.24	19.23	19.35	19.22	19.13	19.17	19.16		19.04		
3	19.27	19.24	19.23	19.34	19.22	19.13	19.16	19.15		19.04		
4	19.27	19.23	19.23	19.34	19.22	19.13	19.15	19.15		19.04		
5	19.27	19.23	19.23	19.31	19.22	19.19	19.15	19.15		19.02		
6	19.27	19.23	19.23	19.28	19.21	19.39	19.14	19.15		19.03		
7	19.27	19.23	19.23	19.26	19.21	19.42	19.13	19.14		19.03		
8	19.27	19.23	19.23	19.25	19.21	19.33	19.13	19.14		19.03		
9	19.27	19.23	19.23	19.25	19.20	19.51	19.13	19.14		19.03		
10	19.27	19.23	19.23	19.25	19.20	19.42	19.12	19.14		19.02		
11	19.27	19.23	19.23	19.25	19.20	19.29	19.12	19.14		19.01		
12	19.27	19.23	19.23	19.24	19.20	19.23	19.12	19.14	18.95	19.01		
13	19.26	19.23	19.23	19.24	19.20	19.21	19.11	19.14	18.96	19.01		
14	19.26	19.23	19.23	19.23	19.20	19.17	19.11	19.14	18.97	19.01		
15	19.26	19.23	19.23	19.23	19.20	19.14	19.11	19.14	18.97	19.01		
16	19.25	19.23	19.23	19.23	19.28	19.12	19.12	19.14	18.97	19.01		
17	19.25	19.23	19.23	19.23	19.43	19.11	19.14	19.14	18.98	19.07		
18	19.25	19.23	19.23	19.23	19.62	19.10	19.16	19.11	18.99	19.19		
19	19.25	19.23	19.23	19.23	19.52	19.08	19.18	19.08	18.99	19.17		
20	19.25	19.23	19.51	19.23	19.37	19.07	19.19	19.05	19.00	19.16		
21	19.25	19.23	19.81	19.23	19.28	19.06	19.15	19.03	19.00	19.15		
22	19.25	19.23	19.58	19.23	19.25	19.04	19.13	19.00	19.09			
23	19.25	19.23	19.71	19.23	19.23	19.05	19.12	18.97	19.07			
24	19.25	19.23	19.60	19.23	19.22	19.05	19.12		19.06			
25	19.25	19.23	19.52	19.23	19.21	19.18	19.15		19.05			
26	19.25	19.23	19.45	19.23	19.20	19.45	19.23		19.04			
27	19.25	19.23	19.43	19.23	19.19	19.32	19.29		19.04			
28	19.25	19.23	19.41	19.23	19.18	19.28	19.24		19.04			
29	19.25		19.39	19.23	19.16	19.23	19.29		19.04			
30	19.25		19.39	19.23	19.15	19.19	19.26		19.04			
31	19.25		19.37		19.15		19.21	18.94				

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TOP OF IMAGE AREA

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TOP OF IMAGE AREA
AND ILLUS-TRATIONS

APPENDIX G
DAILY WATER LEVELS AT WELL DW65
datum 1400m above MSL

Year 1980

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			19.21	19.15	19.65	19.82	19.61	19.61	19.38	19.43	19.38	19.35
2			19.21	19.12	19.60	19.85	19.61	19.55	19.38	19.40	19.38	19.35
3			19.21	19.15	19.58	19.67	19.60	19.49	19.40	19.40	19.38	19.35
4			19.21	19.15	19.58	19.62	19.59	19.47	19.44	19.38	19.37	19.35
5			19.21	19.15	19.57	19.63	19.58	19.47	19.51	19.36	19.37	19.36
6			19.21	19.15	19.56	19.60	19.56	19.48	19.50	19.34	19.38	19.36
7			19.21	19.21	19.55	19.58	19.52	19.48	19.50	19.33	19.38	19.36
8			19.21	19.22	19.55	19.55	19.51	19.58	19.49	19.33	19.39	19.36
9			19.21	19.31	19.52	19.51	19.51	19.49	19.47	19.33	19.39	19.36
10			19.21	19.47	19.51	19.51	19.62	19.46	19.50	19.32	19.40	19.35
11			19.21	19.41	19.51	19.51	19.65	19.40	19.50	19.32	19.40	19.35
12			19.21	19.37	19.47	19.51	19.63	19.40	19.51	19.32	19.40	19.35
13			19.21	19.36	19.47	19.50	19.61	19.40	19.50	19.32	19.40	19.35
14			19.20	19.36	19.46	19.67	19.59	19.40	19.47	19.31	19.40	19.35
15			19.20	19.41	19.45	19.60	19.78	19.40	19.42	19.31	19.40	19.36
16			19.20	19.45	19.45	19.58	19.74	19.40	19.41	19.31	19.40	19.37
17			19.20	19.47	19.45	19.57	19.62	19.40	19.40	19.31	19.40	19.37
18			19.19	19.65	19.44	19.56	19.56	19.38	19.39	19.31	19.39	19.37
19			19.19	19.99	19.43	19.60	19.53	19.38	19.37	19.31	19.37	19.37
20			19.19	19.68	19.42	19.67	19.51	19.38	19.36	19.31	19.37	19.37
21			19.18	19.60	19.50	19.68	19.50	19.38	19.35	19.32	19.36	19.37
22		19.21	19.18	19.56	19.67	19.66	19.49	19.37	19.34	19.33	19.36	19.37
23		19.21	19.18	19.55	19.58	19.63	19.49	19.34	19.33	19.33	19.36	19.37
24		19.21	19.18	19.53	19.57	19.79	19.71	19.33	19.33	19.34	19.35	19.37
25		19.21	19.18	19.50	19.56	19.91	19.62	19.32	19.34	19.35	19.35	19.37
26		19.21	19.18	19.49	19.55	19.73	19.53	19.28	19.65	19.37	19.34	19.37
27		19.21	19.18	19.48	19.55	19.68	19.48	19.30	19.54	19.38	19.35	19.38
28		19.21	19.18	19.47	19.58	19.68	19.48	19.54	19.48	19.38	19.35	19.38
29		19.21	19.18	19.66	19.59	19.66	19.48	19.58	19.46	19.38	19.35	19.37
30			19.18	19.67	19.60	19.63	19.46	19.49	19.46	19.38	19.35	19.37
31			19.17		19.62		19.71	19.40		19.38		19.36

APPENDIX G, Continued,

Year 1981

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	19.34	19.27	19.27	19.48	19.17	19.20	19.46	19.34	19.12	19.35		
2	19.34	19.26	19.27	19.46	19.17	19.30	19.45	19.32	19.12	19.29		
3	19.33	19.26	19.27	19.43	19.17	19.37	19.41	19.30	19.12	19.27		
4	19.33	19.26	19.27	19.41	19.16	19.36	19.37	19.27	19.12	19.24		
5	19.34	19.26	19.27	19.39	19.16	19.63	19.33	19.26	19.12	19.22		
6	19.33	19.26	19.27	19.38	19.16	20.00	19.38	19.25	19.12	19.21		
7	19.34	19.27	19.27	19.37	19.16	19.79	19.42	19.25	19.12	19.21		
8	19.34	19.27	19.27	19.36	19.16	19.65	19.45	19.26	19.12	19.21		
9	19.34	19.27	19.27	19.36	19.16	19.55	19.40	19.24	19.12	19.20		
10	19.34	19.27	19.26	19.33	19.16	19.54	19.38	19.21	19.12	19.19		
11	19.34	19.26	19.26	19.32	19.16	19.47	19.40	19.19	19.12	19.19		
12	19.34	19.26	19.27	19.32	19.16	19.43	19.35	19.19	19.13	19.17		
13	19.33	19.26	19.27	19.30	19.15	19.39	19.32	19.18	19.13	19.32		
14	19.32	19.26	19.27	19.29	19.23	19.34	19.30	19.18	19.15	19.16		
15	19.32	19.26	19.27	19.27	19.30	19.30	19.32	19.17	19.15	19.16		
16	19.32	19.26	19.27	19.26	19.32	19.28	19.41	19.17	19.15	19.16		
17	19.31	19.27	19.27	19.25	19.42	19.27	19.46	19.17	19.16	19.36		
18	19.31	19.27	19.28	19.24	19.82	19.27	19.45	19.16	19.21	19.38		
19	19.30	19.27	19.28	19.23	19.94	19.25	19.40	19.16	19.19	19.31		
20	19.30	19.27	19.33	19.22	19.61	19.24	19.40	19.16	19.17	19.31		
21	19.29	19.27	19.46	19.22	19.50	19.19	19.39	19.15	19.17	19.32		
22		19.27	19.73	19.21	19.44	19.18	19.38	19.15	19.17	19.32		
23		19.27	19.87	19.20	19.39	19.17	19.44	19.15	19.16	19.31		
24		19.27	19.87	19.20	19.36	19.17	19.51	19.15	19.16	19.31		
25		19.27	19.77	19.20	19.32	19.19	19.58	19.15	19.16	19.30		
26	19.29	19.27	19.69	19.20	19.30	19.49	19.63	19.15	19.15	19.30		
27	19.29	19.27	19.66	19.20	19.27	19.52	19.63	19.14	19.19			
28	19.28	19.27	19.60	19.19	19.25	19.54	19.53	19.14	19.20			
29	19.28	0.00	19.55	19.19	19.24	19.46	19.50	19.14	19.19			
30	19.28	19.27	19.53	19.18	19.23	19.43	19.45	19.13	19.19			
31	19.27		19.50		19.21		19.39	19.12				

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APPENDIX H

WATER LEVEL AT WELL DW100

datum 1400m above MSL

1980

Month	Day	Level	Month	Day	Level
5	22	19.26	8	8	19.21
5	23	19.38	8	26	19.22
5	26	19.36	8	27	19.12
5	27	19.33	9	4	19.21
5	28	19.34	9	5	19.21
5	29	19.33	9	10	19.23
5	30	19.30	9	15	19.25
6	2	19.32	9	16	19.23
6	3	19.31	9	17	19.23
6	4	19.44	9	18	19.17
6	5	19.42	9	22	19.13
6	6	19.42	9	23	19.14
6	9	19.39	9	24	19.14
6	11	19.37	9	26	19.21
6	12	19.35	9	29	19.26
6	13	19.35	9	30	19.25
6	16	19.36	10	1	19.24
6	18	19.34	10	2	19.24
6	19	19.35	10	3	19.22
6	23	19.37	10	6	19.19
6	24	19.37	10	7	19.19
6	26	19.40	10	8	19.17
6	27	19.37	10	9	19.17
6	30	19.39	10	10	19.15
7	1	19.37	10	13	19.15
7	2	19.37	10	14	19.15
7	7	19.35	10	15	19.15
7	8	19.34	10	16	19.15
7	10	19.33	10	17	19.15
7	11	19.34	10	20	19.13
7	14	19.35	10	21	19.15
7	18	19.34	10	22	19.15
7	21	19.33	10	23	19.17
7	22	19.32	10	24	19.18
7	24	19.32	10	28	19.22
7	30	19.30	10	29	19.19
8	4	19.27	10	30	19.19

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EPA-287 (Cin.)
(4-76)

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BOTTOM OF IMAGE AREA, OUTSIDE DIMENSION FOR TABLES AND ILLUSTRATIONS
PAGE NUMBER
EPA-287 (Cin.)
(4-76)

1980, Continued

Month	Day	Level
10	31	19.19
11	3	19.22
11	4	19.21
11	5	19.20
11	6	19.22
11	7	19.22
11	10	19.23
11	12	19.23
11	13	19.19
11	17	19.24
11	19	19.22
11	26	19.20
12	1	19.21
12	4	19.21
12	8	19.21
12	16	19.21
12	17	19.20
12	18	19.20

1981

Month	Day	Level
1	7	19.19
2	12	19.13
2	26	19.14
2	27	19.14
3	16	19.16
4	20	19.15
4	21	19.14
4	22	19.13
5	5	19.14
5	6	19.11
5	8	19.07
5	11	19.08
5	12	19.08
5	18	19.33
5	20	19.33
5	27	19.16
6	2	19.10
6	15	19.13
10	5	18.92
10	6	18.92
10	7	18.92
10	8	18.93
10	14	18.91
10	19	19.06

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DROPPED HEAD, BEGIN SECTIONS HERE

APPENDIX I

Daily EC(millisiemens) and Cl(meq/l) for Well DW10

Day 1 = April 7, 1980

Day	EC	Cl	Day	EC	Cl	Day	EC	Cl
1.00	1.89	3.57	37.00	2.00	2.75	73.00	1.94	3.21
2.00	1.89	3.74	38.00	1.93	2.85	74.00	2.05	3.34
3.00	2.03	3.60	39.00	1.94	2.88	75.00	1.90	3.84
4.00	1.82	2.99	40.00	1.77	2.89	76.00	1.89	3.84
5.00	1.81	3.04	41.00	1.84	2.89	77.00	1.92	3.85
6.00	2.14	3.04	42.00	1.84	2.84	78.00	1.94	3.86
7.00	2.17	3.07	43.00	1.92	2.84	79.00	1.97	3.87
8.00	2.20	2.83	44.00	1.84	2.85	80.00	1.88	2.66
9.00	2.15	2.95	45.00	1.97	2.67	81.00	1.98	3.53
10.00	2.10	3.07	46.00	1.92	2.74	82.00	1.95	3.73
11.00	2.05	3.19	47.00	1.83	2.84	83.00	1.97	3.84
12.00	2.00	3.18	48.00	1.88	2.74	84.00	2.22	3.86
13.00	2.01	2.89	49.00	1.86	2.74	85.00	2.22	3.86
14.00	2.09	2.84	50.00	1.99	2.79	86.00	2.17	3.87
15.00	1.99	2.75	51.00	1.81	2.64	87.00	2.35	3.86
16.00	1.89	2.65	52.00	1.66	2.78	88.00	1.92	3.96
17.00	1.86	2.66	53.00	1.87	2.71	89.00	2.07	4.01
18.00	1.93	2.66	54.00	1.86	2.71	90.00	2.14	3.99
19.00	1.98	2.66	55.00	1.72	2.85	91.00	2.01	3.92
20.00	1.99	2.68	56.00	1.87	2.94	92.00	2.03	3.99
21.00	2.00	2.70	57.00	2.06	3.25	93.00	2.02	3.99
22.00	2.01	2.72	58.00	1.73	2.83	94.00	2.27	3.89
23.00	1.96	2.68	59.00	1.92	2.97	95.00	1.91	3.90
24.00	1.91	2.66	60.00	1.91	3.13	96.00	2.01	3.80
25.00	1.86	2.64	61.00	1.88	3.05	97.00	2.04	3.82
26.00	1.81	2.61	62.00	1.94	3.11	98.00	1.91	3.86
27.00	1.90	2.70	63.00	1.64	3.11	99.00	1.93	3.89
28.00	2.02	2.80	64.00	1.93	3.06	100.00	1.95	3.91
29.00	1.90	2.76	65.00	2.00	3.17	101.00	2.19	3.80
30.00	1.99	2.81	66.00	1.77	3.58	102.00	1.96	3.69
31.00	1.94	2.78	67.00	1.88	3.29	103.00	2.03	3.77
32.00	1.89	2.71	68.00	1.86	3.29	104.00	1.96	3.65
33.00	1.95	2.75	69.00	1.87	2.88	105.00	1.93	3.66
34.00	1.96	2.75	70.00	1.85	2.93	106.00	2.05	3.68
35.00	1.88	2.80	71.00	1.85	3.13	107.00	1.84	3.62
36.00	2.10	2.75	72.00	2.02	3.25	108.00	1.89	3.65

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BOTTOM OF IMAGE AREA, OUTSIDE DIMENSION FOR TABLES AND ILLUSTRATIONS

EPA-287 (Cin.)
(4-76)

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TOP OF IMAGE AREA

APPENDIX I, Continued.

DROPPED HEAD, BEGIN SECTION HERE

Day	EC	Cl	Day	EC	Cl	Day	EC	Cl
109.00	2.01	3.88	159.00	1.84	2.67	209.00	1.82	3.01
110.00	1.96	3.69	160.00	1.78	2.06	210.00	1.87	3.03
111.00	1.94	3.68	161.00	1.71	1.45	211.00	1.79	3.00
112.00	1.94	3.68	162.00	1.98	2.67	212.00	1.95	3.05
113.00	2.02	3.55	163.00	1.78	2.79	213.00	1.95	3.30
114.00	1.98	3.58	164.00	1.80	2.79	214.00	1.96	3.05
115.00	1.89	3.55	165.00	1.81	2.79	215.00	1.92	3.11
116.00	1.80	3.41	166.00	1.94	2.77	216.00	1.89	3.02
117.00	1.80	3.30	167.00	1.97	2.79	217.00	2.08	3.08
118.00	1.93	3.21	168.00	2.07	2.86	218.00	2.10	3.05
119.00	1.78	3.25	169.00	2.03	2.86	219.00	1.94	3.09
120.00	1.83	3.23	170.00	1.98	2.86	220.00	1.98	2.80
121.00	1.81	3.42	171.00	2.07	3.05	221.00	1.84	2.80
122.00	2.22	4.09	172.00	1.88	2.76	222.00	1.49	2.66
123.00	1.79	3.20	173.00	1.68	2.47	223.00	1.74	3.22
124.00	1.69	3.02	174.00	1.83	2.36	224.00	1.76	3.10
125.00	1.73	3.13	175.00	1.91	2.46	225.00	1.87	2.90
126.00	1.83	3.16	176.00	1.88	2.50	226.00	1.75	2.86
127.00	1.82	3.16	177.00	2.03	2.49	227.00	1.89	3.14
128.00	1.80	3.13	178.00	1.86	2.47	228.00	1.89	3.14
129.00	1.79	3.09	179.00	1.81	2.50	229.00	2.08	3.14
130.00	1.74	3.02	180.00	1.71	2.54	230.00	1.86	2.90
131.00	1.83	2.98	181.00	1.81	2.59	231.00	1.84	3.14
132.00	1.79	2.93	182.00	1.85	2.45	232.00	1.83	2.94
133.00	1.80	2.87	183.00	1.89	2.64	233.00	1.77	2.90
134.00	1.79	2.93	184.00	1.75	2.64	234.00	2.01	3.14
135.00	1.88	2.98	185.00	1.94	2.57	235.00	1.85	3.22
136.00	1.84	2.89	186.00	1.95	2.55	236.00	1.77	3.01
137.00	1.76	2.83	187.00	1.87	2.64	237.00	1.82	3.22
138.00	1.90	2.89	188.00	1.85	2.61	238.00	1.78	2.90
139.00	1.86	2.83	189.00	1.94	2.59	239.00	1.77	2.98
140.00	1.96	2.87	190.00	2.09	2.64	240.00	1.82	2.98
141.00	1.93	3.00	191.00	2.03	2.64	241.00	1.83	2.94
142.00	1.89	3.13	192.00	2.12	2.61	242.00	1.76	2.90
143.00	1.82	3.13	193.00	1.99	2.64	243.00	1.84	2.64
144.00	1.85	2.70	194.00	2.03	2.68	244.00	1.84	2.64
145.00	1.88	2.72	195.00	1.92	2.70	245.00	1.84	2.64
146.00	1.82	2.72	196.00	1.81	2.71	246.00	1.93	2.05
147.00	1.78	2.60	197.00	1.81	2.68	247.00	2.03	2.05
148.00	1.73	2.54	198.00	1.89	2.83	248.00	1.92	2.95
149.00	1.69	1.65	199.00	1.76	2.82	249.00	1.90	2.95
150.00	1.92	2.68	200.00	1.78	2.78	250.00	1.98	2.84
151.00	1.78	2.64	201.00	1.79	2.89	251.00	1.92	3.02
152.00	1.87	2.67	202.00	1.70	2.82	252.00	1.95	2.05
153.00	1.49	2.40	203.00	1.90	2.84	253.00	1.82	2.95
154.00	1.74	2.67	204.00	1.86	2.90	254.00	1.84	2.95
155.00	1.78	2.79	205.00	2.05	2.89	255.00	1.87	2.05
156.00	1.78	2.61	206.00	1.80	2.93	256.00	1.97	2.84
157.00	1.72	2.67	207.00	1.77	3.00	257.00	2.08	2.05
158.00	1.71	2.52	208.00	1.73	3.05	258.00	2.03	2.25

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BOTTOM OF IMAGE AREA, OUTSIDE DIMENSION FOR TABLES AND ILLUSTRATIONS

EPA-287 (Cin.)
(4-76)

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APPENDIX I, Continued.

DROPPED HEAD; BEGIN SECTIONS HERE

Day	EC	Cl	Day	EC	Cl	Day	EC	Cl
259.00	1.91	2.08	309.0	2.19	3.20	359.0	1.93	3.55
260.00	1.97	3.02	310.0	2.31	3.29	360.0	1.96	3.65
261.00	1.93	2.05	311.0	2.45	3.29	361.0	1.89	3.46
262.00	1.84	2.08	312.0	2.22	3.37	362.0	1.92	3.51
263.00	1.80	2.01	313.0	2.39	3.33	363.0	1.91	3.42
264.00	1.82	1.94	314.0	2.34	3.33	364.0	1.94	3.60
265.00	1.94	2.05	315.0	2.45	3.42	365.0	1.93	3.46
266.00	1.93	2.88	316.0	2.30	3.33	366.0	1.95	3.48
267.00	1.93	2.91	317.0	1.98	1.72	367.0	1.97	3.50
268.00	1.93	2.84	318.0	2.42	3.83	368.0	1.99	3.53
269.00	1.95	2.85	319.0	2.28	3.46	369.0	2.01	3.55
270.00	1.98	2.87	320.0	2.31	3.60	370.0	2.07	3.55
271.00	2.00	2.88	321.0	2.29	3.53	371.0	2.01	3.51
272.00	2.02	2.89	322.0	2.31	3.53	372.0	2.02	3.51
273.0	2.04	3.00	323.0	2.32	3.46	373.0	3.00	3.69
274.0	2.15	2.93	324.0	2.28	3.46	374.0	2.01	3.37
275.	2.19	3.00	325.0	2.37	3.53	375.0	2.12	3.33
276.0	2.22	3.08	326.0	2.35	3.31	376.0	1.98	3.24
277.0	2.23	2.96	327.0	2.15	3.38	377.0	2.01	3.20
278.0	2.14	3.04	328.0	2.29	3.38	378.0	2.14	3.24
279.0	2.08	3.08	329.0	2.23	3.53	379.0	2.01	3.16
280.0	2.24	3.04	330.0	2.24	3.53	380.0	1.91	3.04
281.0	2.18	3.12	331.0	2.32	3.53	381.0	1.96	3.00
282.0	2.32	3.04	332.0	2.33	5.03	382.0	1.99	3.00
283.0	2.19	3.04	333.0	2.32	3.53	383.0	2.16	2.98
284.0	2.15	3.12	334.0	2.31	3.60	384.0	2.32	2.96
285.0	2.23	3.20	335.0	2.36	3.60	385.0	2.23	3.36
286.0	2.14	3.20	336.0	2.42	3.83	386.0	2.15	3.76
287.0	2.08	3.12	337.0	2.29	3.76	387.0	2.06	4.16
288.0	2.24	3.12	338.0	2.38	3.76	388.0	1.98	4.56
289.0	2.18	3.16	339.0	2.38	3.83	389.0	1.89	4.96
290.0	2.14	3.16	340.0	2.50	3.83	390.0	1.86	3.65
291.0	2.19	3.12	341.0	2.35	3.93	391.0	1.84	3.65
292.0	2.18	3.16	342.0	2.22	4.02	392.0	1.89	3.73
293.0	2.14	3.12	343.0	2.07	4.12	393.0	1.88	3.73
294.0	2.15	3.08	344.0	1.93	4.21	394.0	1.84	3.58
295.0	2.18	3.09	345.0	1.93	3.94	395.0	1.79	3.58
296.0	2.21	3.10	346.0	1.85	3.89	396.0	1.87	3.58
297.0	2.24	3.11	347.0	1.95	4.05	397.0	1.87	3.65
298.0	2.27	3.11	348.0	1.97	4.55	398.0	1.90	3.73
299.0	2.30	3.12	349.0	2.03	4.21	399.0	2.00	4.13
300.0	2.26	3.16	350.0	1.94	4.32	400.0	2.15	4.96
301.0	2.40	3.12	351.0	1.95	3.99	401.0	2.01	4.13
302.0	2.24	3.12	352.0	1.98	3.94	402.0	1.80	3.58
303.0	2.32	3.16	353.0	2.09	3.84	403.0	1.93	3.50
304.0	2.32	3.16	354.0	2.00	4.05	404.0	1.78	3.50
305.0	2.34	3.12	355.0	2.02	3.99	405.0	1.84	3.50
306.0	2.41	3.16	356.0	2.02	3.65	406.0	1.91	3.35
307.0	2.35	3.12	357.0	2.03	3.51	407.0	1.88	3.42
308.0	2.28	3.20	358.0	1.95	3.51	408.0	1.77	3.35

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PAGE NUMBER
EPA-287 (Cin.) (4-76)

APPENDIX I, Continued.

Day	EC	Cl	Day	EC	Cl	Day	EC	Cl
409.0	1.90	3.42	457.0	1.69	2.98	505.0	1.63	3.31
410.0	1.91	3.35	458.0	1.88	2.98	506.0	1.69	3.17
411.0	2.00	3.42	459.0	1.86	2.98	507.0	1.78	3.24
412.0	1.95	3.43	460.0	1.68	2.54			
413.0	1.91	3.44	461.0	1.76	2.41			
414.0	1.92	3.56	462.0	1.75	2.45			
415.0	1.93	3.68	463.0	1.80	2.48			
416.0	1.93	3.75	464.0	1.66	2.51			
417.0	1.95	3.62	465.0	1.68	2.51			
418.0	2.00	4.21	466.0	1.64	2.54			
419.0	1.99	3.96	467.0	1.68	2.54			
420.0	2.01	3.62	468.0	1.76	2.51			
421.0	2.01	3.44	469.0	1.86	2.48			
422.0	1.98	3.44	470.0	1.76	2.48			
423.0	1.92	3.32	471.0	1.72	2.41			
424.0	1.87	3.56	472.0	1.68	2.35			
425.0	1.96	3.50	473.0	1.67	2.41			
426.0	2.09	3.38	474.0	1.73	2.35			
427.0	1.98	3.56	475.0	1.79	2.32			
428.0	1.90	3.50	476.0	1.80	2.32			
429.0	1.86	3.50	477.0	1.73	2.29			
430.0	1.94	3.44	478.0	1.72	2.29			
431.0	2.00	3.44	479.0	1.76	2.29			
432.0	1.92	3.56	480.0	1.77	2.35			
433.0	1.93	3.38	481.0	1.77	2.29			
434.0	2.08	3.38	482.0	1.75	2.48			
435.0	2.12	3.32	483.0	1.79	2.54			
436.0	2.17	3.26	484.0	1.64	2.81			
437.0	1.72	3.58	485.0	1.67	2.95			
438.0	1.73	3.55	486.0	1.66	3.02			
439.0	1.73	3.53	487.0	1.65	3.02			
440.0	1.74	3.50	488.0	1.64	3.09			
441.0	1.81	3.50	489.0	1.65	3.02			
442.0	1.77	3.58	490.0	1.64	3.24			
443.0	1.77	3.58	491.0	1.66	3.02			
444.0	1.75	3.50	492.0	1.73	3.02			
445.0	1.69	3.42	493.0	1.64	3.02			
446.0	1.78	3.27	494.0	1.66	3.09			
447.0	1.69	3.35	495.0	1.73	3.17			
448.0	1.75	3.27	496.0	1.65	3.09			
449.0	1.78	3.27	497.0	1.78	3.17			
450.0	1.72	3.20	498.0	1.58	3.46			
451.0	1.72	3.20	499.0	1.73	3.17			
452.0	1.70	3.13	500.0	1.66	3.17			
453.0	1.85	3.20	501.0	1.76	3.17			
454.0	1.72	3.05	502.0	1.74	3.17			
455.0	1.68	3.13	503.0	1.67	3.31			
456.0	1.81	3.05	504.0	1.76	3.31			